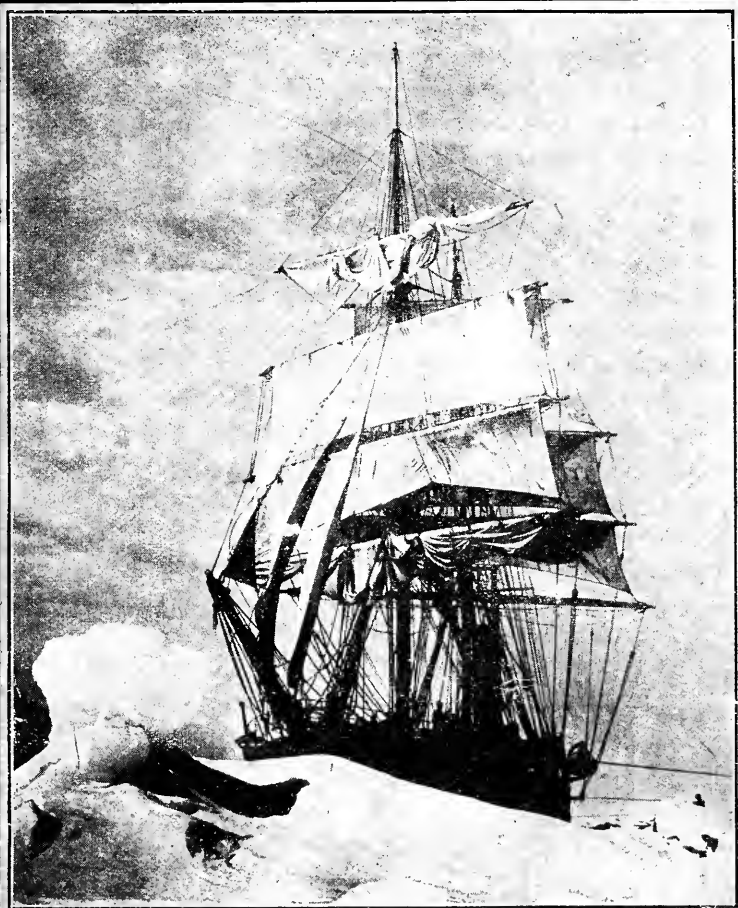


The STORY of
POLAR CONQUEST
PEARY★AMUNDSEN★SCOTT



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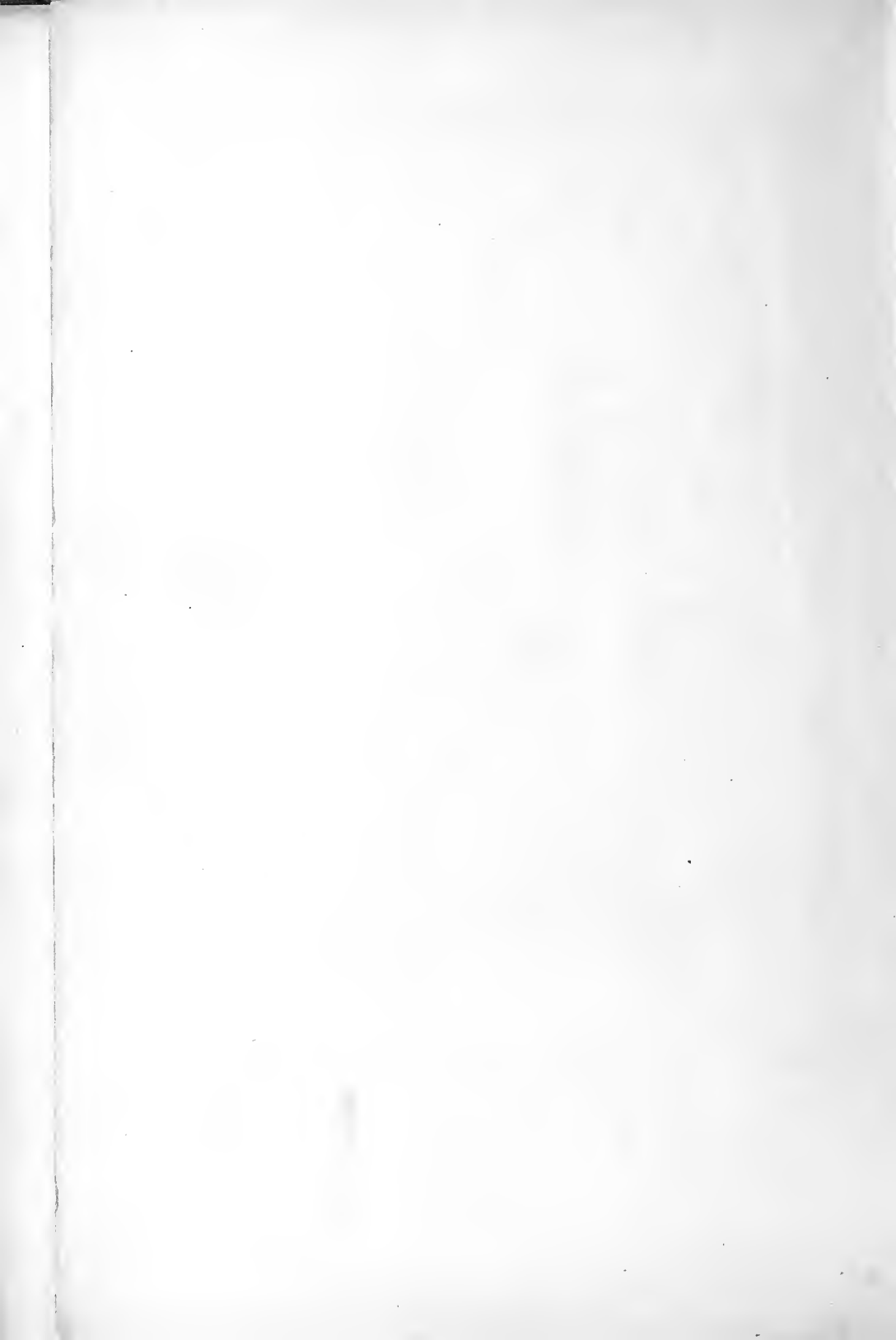
THE TRAGIC FATE
OF THE SCOTT EXPEDITION



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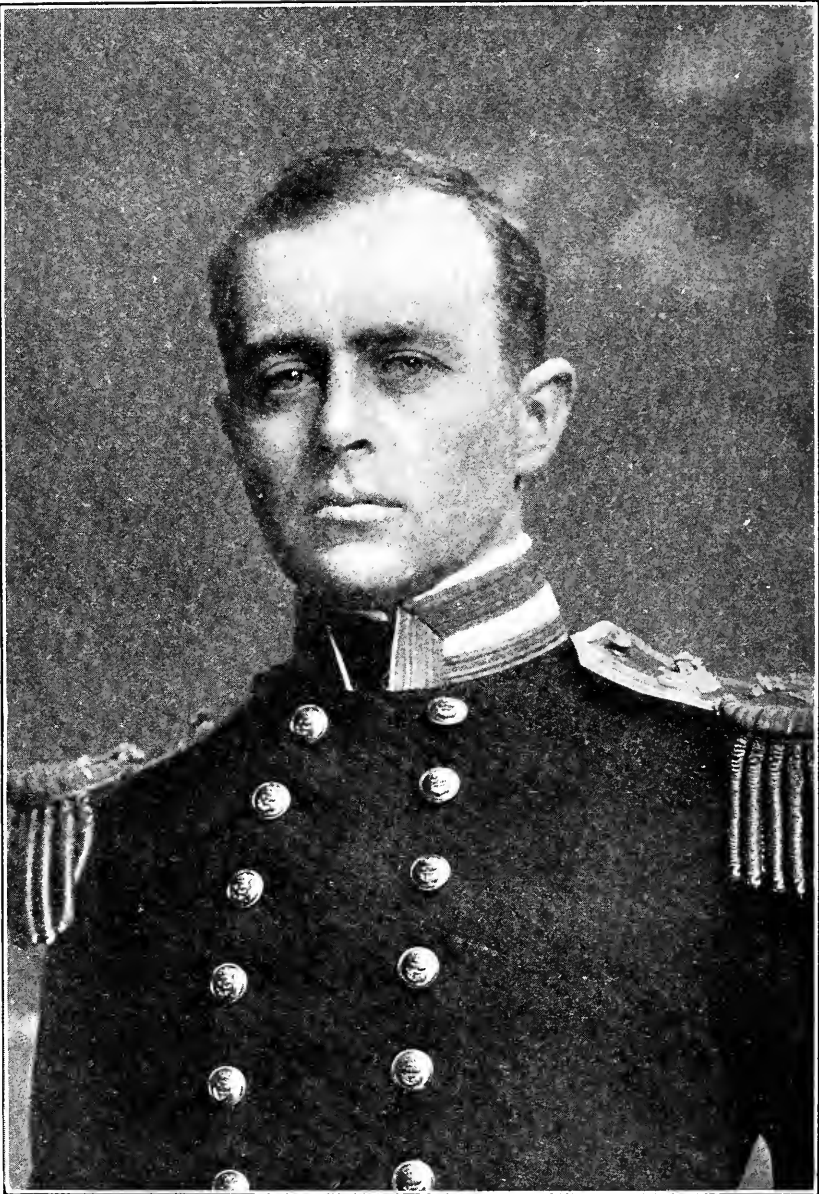






THREE GREAT POLAR EXPLORERS

(Reading from left to right), Sir Ernest H. Shackleton, discoverer of the South Magnetic Pole; Rear-Admiral Robert E. Peary, discoverer of the North Pole; Roald Amundsen, discoverer of the South Pole.



CAPTAIN ROBERT F. SCOTT

Who died a martyr to science after reaching the South Pole, the goal of his ambitions, only to find that a rival had anticipated him.

THE STORY OF POLAR CONQUEST

THE COMPLETE HISTORY OF ARCTIC
AND ANTARCTIC EXPLORATION

INCLUDING

The Discovery of the South Pole
By Amundsen and Scott

THE TRAGIC FATE OF THE
SCOTT EXPEDITION

AND

The Discovery of the North Pole
By Admiral Peary

EDITED

By LOGAN MARSHALL

AUTHOR OF "THE SINKING OF THE TITANIC," "LIFE OF THEODORE ROOSEVELT,"
"BLUE BOOK OF PRACTICAL INFORMATION," ETC.

Illustrated

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SEP 11 1915

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CAPTAIN SCOTT'S LAST MESSAGE TO THE WORLD

"This message to the public:

"The causes of this disaster are not due to faulty organization, but misfortune in all the risks which had to be undertaken.

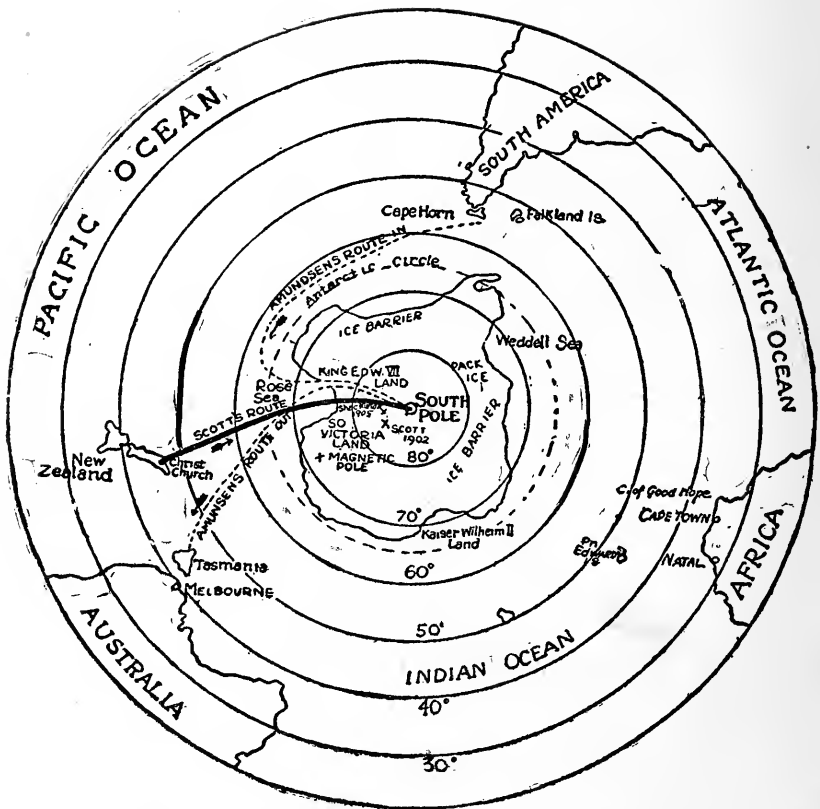
"Writing is difficult, but for my own sake I do not regret this journey, which has shown that Englishmen can endure hardships, help one another and meet death with as great a fortitude as ever in the past. We took risks. We knew we took them. Things have come out against us, and therefore we have no cause for complaint, but bow to the will of Providence, determined still to do our best to the last.

"But if we have been willing to give our lives to this enterprise, which is for the honor of our country, I appeal to our countrymen to see that those who depend on us are properly cared for. Had we lived I should have a tale to tell of the hardihood, endurance and courage of my companions which would have stirred the heart of every Englishman.

"These notes and our dead bodies must tell the tale, but, surely, surely, a great rich country like ours will see that those who are dependent on us are properly provided for.

"R. SCOTT.

"March 25, 1912."



MAP SHOWING THE ROUTES BY WHICH AMUNDSEN AND SCOTT REACHED THE SOUTH POLE, AND THAT OF AMUNDSEN'S RETURN

CHAPTER I

The Scott Expedition and Its Tragic Fate

IN all the history of polar exploration covering nearly four centuries of adventure, hazard, suffering and death, and containing many pages marked with tragedy, there is no incident at once so tragic, pathetic, striking and unique as that contained in the news which reached the civilized world on February 10, 1913, telling of the death of Captain Robert Falcon Scott and his brave companions, who reached the goal of their expedition on January 18, 1912, and who succumbed to the terrible cold and exposure on the return journey, their death occurring about March 29, 1912.

"If blood be the price of Admiralty, Lord God, we ha' paid it fair!" are the words that Kipling puts into the mouths of British sailormen; and to some such reflection men and women of every land were stirred by the tidings of the loss of Captain Scott and the members of his Antarctic expedition. They had achieved their purpose, they had reached their goal, even though anticipated by a month through the intrepidity of Roald Amundsen, the Norwegian. In their last hours there on the frozen Antarctic plain, with no hope of succor from any quarter, these gallant men might have said, as Greeley said to his rescuers: "Here we are; we did what we came to do; we are dying like men."

The British Antarctic expedition of Captain Scott for the discovery of the South Pole began on June 1, 1910, when his vessel, the "Terra Nova," sailed from London for Portsmouth and Cardiff.

Thanks to a fund of \$200,000 which had been raised for him by the government and the people to aid him win for British glory the conquest of the last undiscovered region of the earth, Captain

Scott's expedition was the most completely and ingeniously equipped of any that had ever set out for Arctic or Antarctic exploration.

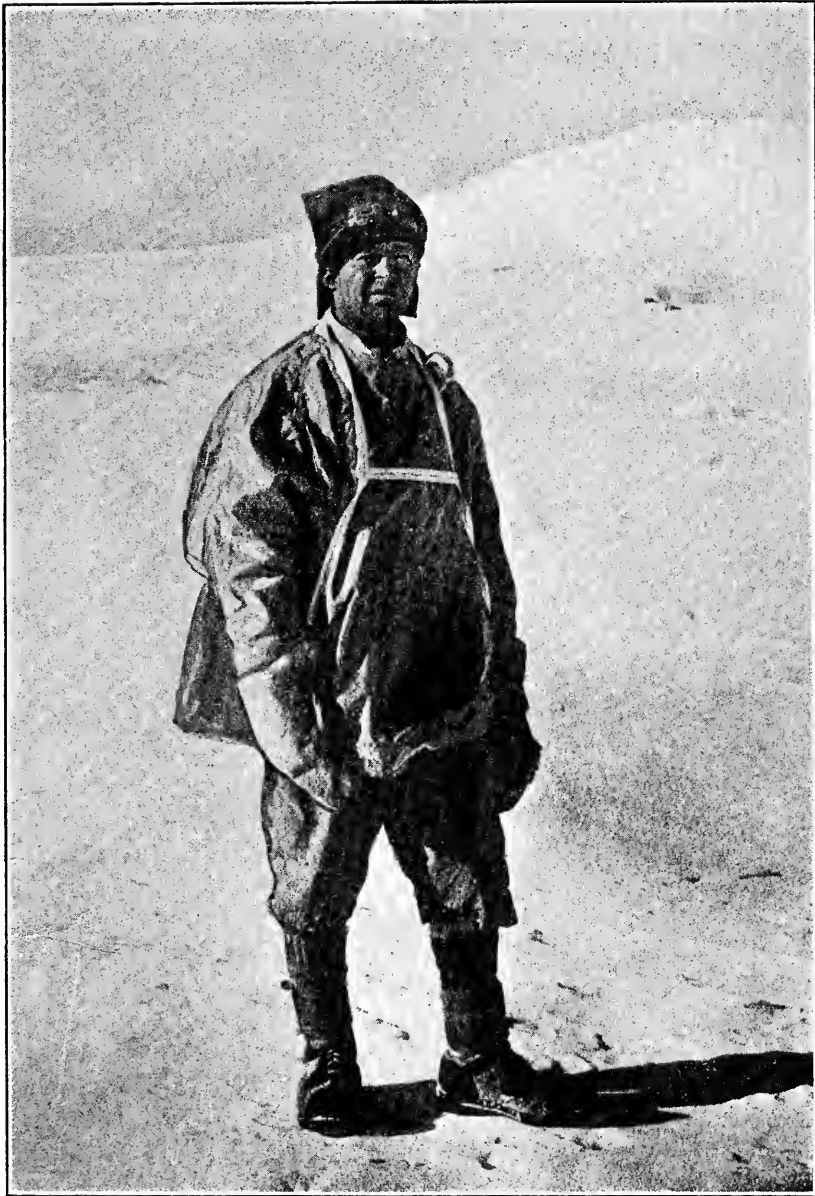
The "Terra Nova" was formerly a Dundee whaler, built twenty-eight years ago. It was purchased by the British Admiralty in 1903 as a relief ship for the earliest British Antarctic expedition of Captain Scott on the ship "Discovery," in 1901-1904. In 1905 the vessel had made an extensive North Polar expedition to Franz Josef Land, thus having ranged from the ice barrier in the south to the northern polar pack.

The "Terra Nova" carried sixty persons in all and stores for three years. Besides twenty Siberian ponies and thirty dogs for the transportation of supplies, and of the men themselves in the latter stages of the journey, the expedition carried, as a development in Antarctic travel, two specially designed motor sledges for the transportation of men and supplies from the ship to the foot of the glacier. The sledges were capable of covering from two to three and a half miles an hour under the most rigorous conditions.

Captain Scott planned to divide his expedition into two parties, one in the west setting out for the pole from McMurdo Sound, and a second, about 400 miles east of it, exploring King Edward's Land.

The "Terra Nova" carried the largest scientific staff ever taken on such an expedition, it being the avowed purpose of Captain Scott, irrespective of his success in reaching the Pole itself, to bring back a wealth of accurate data. The expedition, therefore, consisted of twenty-eight officers and scientists, in addition to the crew of twenty-seven picked from hundreds of volunteers.

The principal members of the expedition, besides Captain Scott, were: Lieutenant E. R. G. R. Evans, R.N., second in command of the proposed western party; Dr. E. A. Wilson, chief of the scientific staff, zoologist and artist; Lieutenant V. L. A. Campbell, R.N., leader of the eastern party; Lieutenant H. L. L. Pennell, R.N., magnetic and meteorological work; Lieutenant H. E. deP. Rennick, R.N., of the western party; Lieutenant H. R. Bowers, Royal



CAPTAIN SCOTT IN ANTARCTIC COSTUME

His expedition was thoroughly equipped and well planned in every way. The disaster was caused by the loss of equipment, the delay due to sickness on the journey back from the Pole, with the consequent shortage of food and fuel, and the terrible climatic conditions encountered.



THE "TERRA NOVA," CAPTAIN ROBERT F. SCOTT'S SHIP,
CAUGHT IN THE ICE

Indian Marines; Engineer-Lieutenant E. W. Riley, R.N.; Surgeon G. M. Levick, R.N., doctor and zoologist; Surgeon E. L. Atkinson, R.N., doctor, bacteriologist and parasitologist; F. R. H. Drake, R.N., secretary; C. H. Meares, in charge of the ponies and dogs for the western party; Captain R. E. G. Oates, Inniskilling Dragoons, in charge of ponies and dogs; Dr. G. L. Simpson, physicist of the western party; T. Griffin Taylor, geologist; E. W. Nelson, biologist of the western party; D. G. Lillie, biologist; A. Cherry Garrard, assistant zoologist of the western party; H. G. Ponting, photographer of the western party; B. C. Day, motor engineer of the western party; W. G. Thompson, geologist of the western party; C. S. Wright, chemist of the western party.

Mr. Ponting, who is a fellow of the Royal Geographical Society, had a wide experience as a scientific photographer, having traveled twice around the world, and illustrated more than twenty different countries. He took cameras specially made of light, strong metal, two cinematograph machines and a complete developing outfit.

The voyage to New Zealand was accomplished without special incident, and on November 29, 1910, a start was made from Port Chalmers, near Christchurch, New Zealand. From there the "Terra Nova" made direct south into Ross Sea. Early in January, 1911, she forced her way into McMurdo Sound, where winter quarters were established on Cape Evans. In the journey to McMurdo Sound, however, at which point the polar expedition was to leave the vessel, two ponies and one dog were lost in storms that swept away part of the vessel's bulwarks and almost quenched the fires in her engine room. The members of the expedition had a very arduous task in putting their stores on shore and the work took a week. One of the motor sledges was lost through a hole in the ice at this early stage of the expedition. However, the men were able to make themselves very comfortable at Cape Evans in houses which they had carried with them in "knockdown" form. They at once began their scientific observations.

Provisions for a three years' stay in the ice regions had been taken on board the "Terra Nova" and these were placed on shore.

Captain Scott relied on his motor sledges to transport the expedition to the foot of the glacier, and on the ponies to carry sufficient food to that point, while he depended on the dog teams, with relays of men, to take the loads over the glacier, and on picked men and dogs to make the final dash across the inland ice sheet to the Pole.

Captain Scott's main traveling party was to consist of sixteen men besides himself, while groups of four men each were to return at different stages of the journey, leaving Scott and four others to complete the final dash to the Pole.

As soon as the preliminary arrangements were completed at Cape Evans, Captain Scott departed south on a sledge journey with twelve men, expecting to return over new ice early in April. Meanwhile the "Terra Nova" proceeded westward to land a geological party, and then eastward to land a party of exploration on King Edward's Land.

Proceeding eastward from McMurdo Sound, the "Terra Nova" surveyed the Great Ice Barrier as far as 170 west longitude. A landing on King Edward's Land, however, was prevented by the fact that the "Terra Nova" encountered a high barrier of ice at Cape Colbeck on February 2, 1911. The ship therefore put back toward McMurdo Sound.

Two days later one of the most dramatic incidents of the race for the South Pole occurred, for on rounding an ice cape and coming in sight of the Bay of Whales, in latitude 78 degrees 40 minutes south, Lieutenant Pennell, in command, came suddenly and unexpectedly upon the "Fram," the staunch old Norwegian ship in which Nansen had made his North Pole journeys, and from which, the men of the Scott expedition now learned for the first time, Captain Roald Amundsen and his party, fully equipped, were making a quiet little dash of their own toward the South Pole.

The news of this meeting, which was cabled from Stewart

Island on March 27, 1911, startled the civilized world, for it was believed, as originally announced by the Norwegian explorer himself, that Amundsen was heading for the North Pole. He had admitted at Madeira that he might do a little work in the Antarctic in passing, but no one supposed then that he had any intention of making a dash for the South Pole. Nothing had been heard of Amundsen since he left Madeira in October, 1910, ostensibly bound to round Cape Horn and try for the North Pole.

The race for the South Pole suddenly became international, and back in civilization people began to discuss the etiquette of Captain Amundsen's keeping this south polar plan secret, and his landing near, if not in, Captain Scott's announced sphere of exploration.

The "Terra Nova," after saluting the "Fram," returned to McMurdo Sound and continued eastward and northward to Cape Adare, where it landed a party for the winter. This, being in the sphere of exploration announced by Dr. D. Mawson, an Australian explorer, who was to start soon afterward, brought, in turn, in civilized countries some criticism as to the etiquette of the Scott expedition.

The main interest, however, centered in the question of who—Scott or Amundsen—would reach the South Pole first. Amundsen started from a point 80 miles further south than Scott. Yet to dash straightway toward the South Pole might mean the encountering of a formidable mountain chain to bar approach to the goal, an unknown quantity which it was thought he would be unwilling to face, preferring instead to go up by way of the better-known route of Beardmore Glacier, between the Commonwealth and Queen Alexandra ranges of mountains.

It was through this glacier that Captain Scott planned, as one alternative, to strike toward the Pole. To reach the glacier he had to complete the first stage of his dash by means of motor sledges, ponies, dogs and ski runners, past Mt. Hope, where his chief transport agents were to be left.

It was on January 25, 1911, that Captain Scott and his party left Cape Evans to establish depots. Shortly afterwards the breaking of the sea-ice at South Cape cut off connection with Cape Evans. The depot-laying party was composed of twelve men, who with two dog teams and eight ponies were occupied for more than a month in fitting out a main camp seven miles to the southeast of Hut Point at the foot of the barrier. Here were left the greater part of the supplies in order to lighten as much as possible the weight to be transported. From this point the party worked 27 miles to the southeast with single loads to a place which they named Corner Camp, and then turned south to avoid the crevasses of White Island. The work was particularly hard on account of the soft surface of the snow, the three days' blizzard which had been encountered at Corner Camp and the poor condition of the ponies.

Scott and his party continued south, and while the weather became no better, the surface of the snow materially improved, making progress much easier. The marching was done at night and the days were spent in rest. It was necessary to send back three of the weakest ponies, but owing to another severe blizzard, which was encountered during their return, two of them died. On February 16th, with the remaining ponies and dogs, Scott reached latitude 79 degrees 30 minutes. By this time the weather conditions had become so terrible that Scott decided to make a depot at this point with the bulk of the supplies carried with him, and then return to Base Camp with the dog teams. About one ton of supplies were left and the station was named One Ton Camp.

Crossing a corner of White Island, one of the dog teams fell in a crevasse. The sledge, containing Scott and Mears, fortunately did not go over, but held the dogs hanging by their harness. It required three hours' arduous work to rescue the dogs, one of which was so severely injured that it died shortly afterwards. On reaching Base Camp Scott was delighted to find the ponies much improved, and in fact in excellent condition. He also for the first time received

the news of the sighting of Amundsen's ship, the "Fram," and of Amundsen's determination to seek the South Pole.

After a short rest the party set out again on February 24th to carry further supplies to Corner Camp, and, despite a severe blizzard, succeeded in making the journey and returned to Base Camp on February 28th. The storm had raged with such severity that all efforts to shelter the ponies with snow walls had failed, and the snow with the terrific, biting, freezing wind had left the ponies much the worse for their experience. On this account Scott determined to retire to Hut Point. This trip was made in three relays, Wilson and Mears going forward at once with dog teams. Scott, with Oates and Gran, held back in the endeavor to save one of the ponies which was in a very serious condition, while Bowers, Cherry, Garrard and Crean, with the four best ponies, followed the dog teams. Near Hut Point, Bowers and his companions were compelled to stop and make camp in order to rest the ponies. The halt was made at 2 A. M. on March 1st. At 4:30 A. M. a commotion aroused the men, who found that the ice was breaking all around the camp and moving with a heavy swell. Quickly taking up its march again, the party worked its way with the greatest difficulty over the broken ice toward the barrier that night without losing any of the ponies. After about eight hours of the most hazardous traveling over the broken ice floes they reached the barrier, but were unable to surmount it. Finding themselves in constant peril from the grinding of the huge ice cakes against the barrier, they sent Crean eastward over the moving ice in an effort to find a pass in the barrier. Meanwhile Scott and his companions, who were unsuccessful in their efforts to save the sick pony, reached the barrier at another point and were forced to retreat by the grinding and breaking of the ice against the barrier. Wilson, who had come out from Base Camp, met Scott and informed him of having seen ponies adrift on the sea ice. Later Crean came upon Scott's party, and with Scott and Oates started back to assist Bowers and his companions. After several hours of most tiresome and

nerve-racking effort they succeeded in reaching the men, but it was after midnight before the sledges could be hoisted over the barrier with the use of Alpine ropes. The ponies, however, had to be left on the moving ice with full nose bags until the morning.

Resting until 8 A. M. the party moved north to where the ponies had been carried by the ice and again went to their rescue. Bowers and Oates succeeded in reaching the animals and endeavored to lead them back to the edge of the ice floe, but owing to the many perilous jumps only one pony was rescued, the others being lost to the killer whales. This pony, and one which Scott had with him, were now the only two left in addition to those at Cape Evans—a severe blow to the expedition.

On March 4th Hut Point was reached, but the building required considerable repairs before it could be made habitable. Here on March 15th Scott and his party were augmented by the return of the Western Geological Party, which brought the number up to sixteen. After completing their arrangement for depots by further trips to Corner Camp, Scott with eight of his companions started back for Cape Evans on April 11th, which point they reached on the 13th. The station was found in the best of order with the self-recording instruments in perfect operation. It was found, however, that one of the nine ponies which had been left at Cape Evans had died, together with one of the dogs. It was not until May 13th, three weeks after the sun had gone, that the rest of the men and animals from Hut Point returned to Cape Evans; then the whole party, reunited for the long night, settled themselves down in their winter quarters where the provision that had been made for heating, lighting, ventilating and cooking proved highly satisfactory. The ponies and dogs were also comfortably stabled. The four months that followed were not, however, months of idleness. There was much routine and scientific work to be done, the animals had to be exercised, lectures were held, and even football was indulged in on the ice.

With the return of the sun in August active preparations were made for the coming dash to the Pole, and with the dogs and ponies in good condition the hopes of the men ran high. During the winter four of the dogs had been lost through some mysterious disease from which they succumbed within a few hours after the first symptoms of illness. Mears and Dimitri with dog teams established themselves at Hut Point, and by the end of the month a telephone had been installed between that point and Cape Evans. A trip was also made to Corner Camp by Lieutenant Evans, Gran and Forde, and on September 15th, accompanied by Bowers, Simpson and Petty Officer Evans, Scott made a trip to the west as far as Ferrar Glacier, where it was found from the stakes planted by Wright that the ice had moved thirty feet in seven months. With the departure a few days later of the Western Geological Party, composed of Taylor, Debenham, Gran and Forde, the activities of the main party which was to travel toward the goal were further increased.

On October 30th, Lieutenant Evans, Bay, Lashley and Hooper, composing the motor sledge party, started out with the motor sledges carrying fuel and forage. Difficulty was experienced on the ice at places where it had only a thin covering of snow, but notwithstanding this, the motor sledges demonstrated their efficiency beyond question.

On November 2nd the pony party, consisting of Scott, Wilson, Oates, Bowers, Cherry, Garrard, Atkinson, Wright, Evans, Crean and Keokane, started forward for Corner Camp. The ponies were worked with light loads and easy marches to Corner Camp, with full loads and easy marches to One Ton Camp, and with increased pressure thereafter. Corner Camp was reached on November 24th by Scott and the pony party and also by the dog teams which had caught up with Scott some days earlier. Traveling about 15 miles every night, Scott and his companions, with the ponies and dogs, found the motor party waiting at latitude 80 degrees 30 minutes. The motors were abandoned because of the over-heating of the air-cooled

*

engines. Scott preferred the abandonment of the sledges, which up to this point had proved exceedingly valuable, rather than to take time to remedy their defects. At intervals of four miles snow cairns were constructed as guide posts for homeward parties, and at every degree of latitude a week's provisions were deposited. At latitude 81 degrees 15 minutes the motor party returned. On December 10th, latitude 83 degrees 45 minutes was reached. Up to this time three of the ponies had been killed and two more were sacrificed near the 83rd parallel. These animals were not exhausted by any means, but on account of lightening loads their services were no longer required and they were therefore used as food for the dogs.

As the party proceeded to the south the weather conditions became more and more severe. The fall of snow was almost constant, and sky and land were only infrequently visible. Despite these handicaps Scott pushed steadily forward, and owing to Captain Oates' careful attention to the ponies, the sturdy little animals continued to pull splendidly. On December 4th the explorers reached latitude 83 degrees 24 minutes, which was within twelve miles of Mt. Hope. Had it not been for the severity of the storms probably the glacier would have been reached on the following day, but the violent wind and fall of snow continued and the men found it necessary repeatedly to dig the ponies out of the snow. The storm continued to rage for four days, during which time land could not be seen, although only a few miles away. When the storm ceased the temperature rose to plus three, with the result that the melting snow completely soaked all of the equipment. Scott and his men then moved forward with the greatest difficulty, as the storm had left eighteen inches of wet snow on what had previously been a difficult surface. Progress would have been impossible had not the leading pony worn snow shoes. After fourteen hours of the most difficult traveling without stopping for a meal, only eight miles had been covered. On December 10th, the Beardmore Glacier was reached with the greatest difficulty. The men who were not provided with

skis sank to their knees in the wet snow at almost every step, while the sledges settled to their crossbars. The uneven surface of the glacier was found to be filled with the hated soft snow, and for four days an almost hopeless struggle was maintained under these conditions. Working ten to eleven hours a day, it was barely possible to advance twenty miles in the four days. Only the indomitable courage of Scott and his companions made it possible to go forward at all. On the fifth day the surface of the snow became a trifle harder, but the party did not reach Cloudbreaker Mountain until December 17th, a full week behind their schedule.

From this point on progress was better, and the party advanced from thirteen to twenty-three miles a day, reaching latitude 85 degrees 7 minutes south, in longitude 163 degrees 4 minutes east on December 21st, at a point about 6,800 feet above sea level, and about four miles south of the parallel of Mt. Darwin. From here the party going forward consisted of Scott, Lieutenant Evans, Wilson, Bowers, Oates, Lashley, Petty Officer Evans and Crean, the others going back. Leaving the Upper Glacier Depot, the party turned to the southwest to avoid as much as possible the pressure of ridges and crevasses which gave frequent trouble.

Christmas day was celebrated by extra rations close to the 86th parallel, but in other respects the hard work was continued, and seventeen miles of progress was reported on that day, but the week following was more difficult and a halt was made on New Year's Eve in latitude 86 degrees 56 minutes, where provisions were deposited and the sledges were rebuilt with new runners. Despite the fact that this work involved the loss of a day, it was amply repaid by the increased efficiency of the sledges, and on January 3, 1912, the party reached latitude 87 degrees 49 minutes south at a height of 9,800 feet. Here the party was further reduced, those going forward being Captain Scott, Dr. Wilson, Captain Oates, Lieutenant Bowers, and Petty Officer Evans, the others turning back. Being within 150 miles of the Pole, the advance party carried with them a month's

provisions. It was indeed a most difficult task for Scott to select the members of the advance party as everyone was fit and anxious to go forward. Each man had worked his hardest and was desirous of making the entire trip to the goal.

It is interesting here to notice the movement of the returning parties. Hooper and Day, who turned back on November 4th, reached Cape Evans on January 21st without serious mishap. When they reached the motor sledge which had been abandoned by the outward-bound party on the barrier near Safety Cape the previous week, they stopped to repair the motor, the necessary parts having been brought out by others on a later trip.

Atkinson, Wright, Cherry, Garrard and Keokane, who left Scott's party at Upper Glacier Depot on December 21st, reached Cape Evans only a week later than Hooper and Day. On the descent of Beardmore Glacier, Atkinson and his four companions spent Christmas Day in the vicinity of Cloudbreaker Mountain, where they collected a number of valuable geological specimens.

The return of Lieutenant Evans, accompanied by Lashley and Crean, was made rapidly and without unusual incidents until January 9th, when they were attacked by a very severe blizzard, which considerably delayed them. In order therefore to make their rations last they headed their course direct for Mt. Darwin Depot, which necessitated their crossing Shackleton's Ice Falls at the head of Beardmore Glacier. By this means they saved a day's march. Descending the glacier they rode on their sledge the greater part of the way, and by this means made good progress, except that they were frequently upset. These minor incidents, however, were of no consequence, and the party succeeded in reaching the relatively flat surface at the foot of Shackleton's Ice Falls on January 17th.

When the party reached latitude 80 degrees 43 minutes, Lieutenant Evans was attacked by the dreaded scurvy. Lashley and Crean exerted themselves to the utmost to assist their companion, but notwithstanding this it was necessary for him to continue in

the work of dragging the sledge owing to the smallness of the party. The seriousness of his condition increased daily, until, when One Ton Camp was reached, 136 miles from Discovery Hut, he was unable to stand without support. With all the symptoms of advanced scurvy, Evans continued to struggle onward for four days, during which the party covered fifty-three miles, which was a most remarkable performance considering the man's serious condition. Here his companions cached every item of their equipment which was not absolutely necessary for their bare existence. Then with Evans on the sledge, well wrapped up in furs, they put forth heroic efforts to proceed with this load. They advanced slowly until they reached Corner Camp on February 17th, where the uninterrupted fall of snow made it absolutely necessary to stop, as Lashley and Crean with their united efforts, could barely move the sledge.

What followed well illustrates the noble character of the stricken man's companions. As Evans' condition continued to grow more serious and the food supplies were dwindling, a radical step was required. Accordingly Crean started out alone to walk the thirty miles' distance to Discovery Hut, while Lashley stayed with Evans to nurse the sick man. To Lashley's faithfulness and skillful nursing Lieutenant Evans owes his life. Crean covered the thirty miles to Discovery Hut in eighteen hours in a much exhausted condition. Here he found Dr. Atkinson and Dimitri with two dog teams. Immediately a very severe blizzard started, but waiting for only the worst of the storm to pass, Atkinson and Dimitri started with all possible haste to the rescue of Evans and Lashley. Helped by the dog teams, they succeeded by an all night march in reaching Evans and Lashley with the fresh food so much needed by the sick man. With only a short rest for the dogs, the four men returned to Discovery Hut, from which after a week's rest Evans was carried on a sledge to the "Terra Nova."

After much cruising among the ice, during which time considerable scientific work was done, the "Terra Nova" finally set sail on

March 5th to spend the winter in New Zealand, and to carry back news of the expedition. Even at that date it was only with much difficulty that the ship made its way out of the ice, which was already beginning to close in. Akaroa, New Zealand, was finally reached on April 1st.

After Lieutenant Evans, Lashley and Crean left Scott on January 3, 1912, in latitude 87 degrees 49 minutes, the latter, accompanied now only by Wilson, Oates, Bowers and Petty Officer Evans, pushed ahead with renewed hopes to cover the remaining 150 miles that lay between them and the Pole. The traveling was very difficult, but as their repeated observations showed them they were coming nearer and nearer their goal, their determination increased. Moving at the rate of ten to twelve miles per day, they drew farther south until, on January 18th, they reached latitude 90 degrees—from which to travel in any direction meant going north!

January 17th had been cloudy, with the sun barely discernible. The weather cleared the following day, enabling the explorers to make their observations more easily and accurately. For this purpose Captain Scott used a four-inch theodolite, whereas Amundsen had used what is known as a sextant with an artificial horizon. Scott's observations showed his position to be in latitude 89 degrees 59½ minutes. Accordingly the party traveled half a mile further, where in latitude 90 degrees they hoisted a British flag to mark the location of the Pole. On this extra half-mile march the party found the tracks of Amundsen's dogs, and, following these, they reached the tent and records which Amundsen had left. The points located respectively by Amundsen and Scott for the South Pole were practically the same, being only about one-half mile apart.

Some time was spent at the Pole taking photographs and making various scientific observations. The temperature was about twenty degrees below zero, and the surface of the snow was soft, while an analysis of the melting snow showed it to be quite different from that found at the barrier.

Soon the party, their mission accomplished, turned back toward Cape Evans. The journey as far as Beardmoore Glacier was made in good time, with marches of as much as eighteen miles a day. This was accomplished in spite of the fact that Petty Officer Evans, the most rugged man in the party, was in a weak condition and had been so since they reached the Pole. He had not materially delayed the party until the glacier was reached on the return journey, but now his condition aroused some anxiety. The descent of the glacier was made with considerable difficulty, owing to the very rough surfaces to be traversed. Frequently obstacles ten and twelve feet in height had to be surmounted. On one of these occasions Evans, in his weakened condition, slipped and fell and received a serious concussion of the brain. In consequence the progress of the party was considerably retarded, with the result that their food supplies dwindled.

On February 17th Evans stopped to adjust one of his skis which had worked loose. His companions kept on going, with the expectation that he would soon catch up with them. As he did not do so, a halt was made and a meal was cooked pending Evans' arrival. When he did not make his appearance by the time the meal was ready, Scott and his companions turned back and found Evans in the snow totally exhausted. Despite his brave effort to go on, it was felt necessary to carry him on a sledge, and in less than two hours he was dead. This delay made further inroads, both physically and mentally, on the vitality of the party, which now consisted of Captain Scott, Dr. Wilson, Captain Oates and Lieutenant Bowers. Their food supplies continued to decrease, and as the lateness of the season made travel even more difficult, their anxiety correspondingly heightened. The average distance between the depots at which they had left food was about sixty-five miles, so that it was necessary for them to advance an average of more than nine miles a day, which was about the best performance that the men had been able to make in their very much better condition over the same territory in their trip toward the Pole.

At this point a fresh cause for anxiety arose from the condition of Captain Oates, whose hands and feet were severely frost-bitten owing to the severe temperatures and the terrible, cutting winds. His condition grew very serious, and, though he struggled on as best he could, he knew, and his companions knew, that he was a serious handicap to them.

On March 16th Oates was absolutely unable to keep up the fight any longer, but Scott, Wilson and Bowers refused to desert him, and he, on the other hand, was not willing to hold them back. What follows Captain Scott recorded in his diary with this tribute to Captain Oates:

"He was a brave soul. He slept through the night, hoping not to awake, but he awoke in the morning. It was blowing a blizzard. Oates said: 'I am just going outside and may be some time.' He went out into the blizzard, and we have not seen him since."

Further on Captain Scott writes:

"We knew that Oates was walking to his death, but, though we tried to persuade him, we knew it was the act of a brave man and an English gentleman."

On the party struggled over the bad surface. The persistent winds and the frequently occurring blizzards would have taxed the strength of strong men. To Scott, Wilson and Bowers, in their exhausted condition and with their short rations and lack of sufficient fuel, progress was almost impossible. Still they would not give up, until, on March 21st, an unusually severe blizzard forced the party to make camp in latitude 79 degrees 40 minutes south, in longitude 169 degrees 23 minutes east, at a point only eleven miles from One Ton Camp, where they would have found abundant food and fuel. Here, with salvation almost within reach, they were compelled to remain in their tent, having only food enough for two days and fuel for one hot meal.

The end had come. They had no weapons with which to continue the fight. Their food and fuel were exhausted. Their vitality

was gone. Even hope was gone. Scott wrapped Dr. Wilson and Lieutenant Bowers, half unconscious, in their sleeping bags and sat down to write in his diary for the last time. This is what he wrote;

“MESSAGE TO THE PUBLIC.

“The causes of this disaster are not due to faulty organization, but to misfortune in all the risks which had to be undertaken.

“One, the loss of the pony transport in March, 1911, obliged me to start later than I had intended, and obliged the limits of the stuff transported to be narrowed.

“The weather throughout the outward journey, and especially the long gale in 83 degrees south, stopped us. The soft snow in the lower reaches of the glacier again reduced the pace.

“We fought these untoward events with a will and conquered, but it ate into our provision reserve.

“Every detail of our food supplies, clothing and depots made on the interior ice sheet on that long stretch of 7000 miles to the Pole and back worked out to perfection.

“The advance party would have returned to the glacier in fine form and with a surplus of food but for the astonishing failure of the man whom we had least expected to fail. Seaman Edgar Evans was thought the strongest man of the party, and the Beardmore Glacier is not difficult in fine weather; but on our return we did not get a single fine day. This, with a sick companion, enormously increased our anxieties.

“I have said elsewhere that we got into frightfully rough ice, and Edgar Evans received a concussion of the brain. He died a natural death, but left us a shaken party, with the season unduly advanced.

“But all the facts enumerated were as nothing to the surprise which awaited us on the barrier. I maintain that our arrangements for returning were quite adequate and that no one in the world

would have done better in the weather which we encountered at this time of the year. On the summit, in latitude 85 degrees to 86 degrees, we had minus 20 to minus 30. On the barrier, in latitude 82 degrees, 10,000 feet lower, we had minus 30 in the day and minus 47 at night pretty regularly, with continuous head winds during our day marches.

"It is clear that these circumstances came on very suddenly, and our wreck is certainly due to this sudden advent of severe weather, which doesn't seem to have had any satisfactory cause.

"I do not think human beings ever came through such a month as we have come through, and we should have got through in spite of the weather but for the sickening of a second companion, Captain Oates, and a shortage of fuel in our depots, for which I cannot account, and, finally, but for the storm which has fallen on us within eleven miles of this depot, at which we hoped to secure the final supplies.

"Surely misfortune could scarcely have exceeded this last blow.

"We arrived within eleven miles of our old One Ton Camp with fuel for one hot meal and food for two days. For four days we have been unable to leave the tent, the gale blowing about us.

"We are weak.

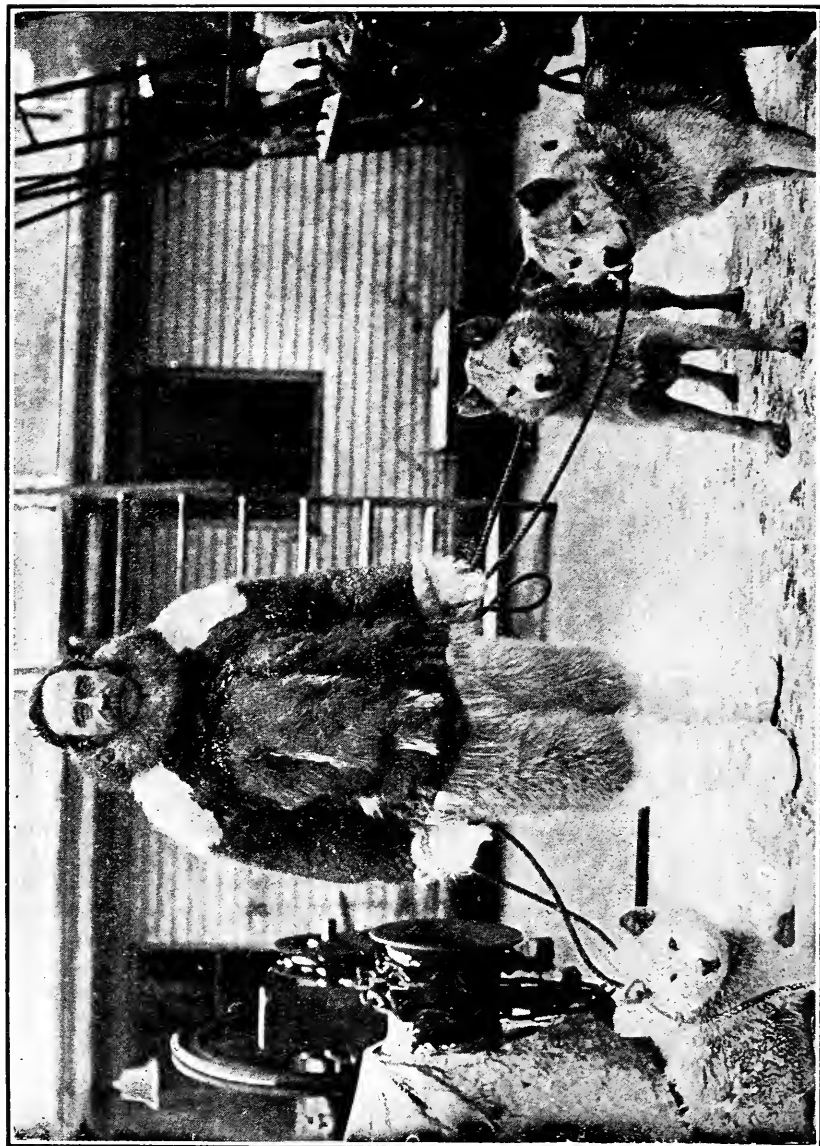
"Writing is difficult; but for my own sake I do not regret this journey, which has shown that Englishmen can endure hardships, help one another and meet death with as great a fortitude as ever in the past. We took risks. We knew we took them. Things have come out against us, and, therefore, we have no cause for complaint, but bow to the will of Providence, determined still to do our best to the last.

"But if we have been willing to give our lives to this enterprise, which is for the honor of our country, I appeal to our countrymen to see that those who depend on us are properly cared for. Had we lived I should have had a tale to tell of the hardihood, endurance and courage of my companions which would have stirred the heart of every Englishman.



ONE OF AMUNDSEN'S DOG SLEDGES

These sledges drawn by dogs were used to transport all the supplies and equipment and had to be not only very strong but light in weight. Much of the success of an expedition depends on the sledges.



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COMMANDER ROBERT E. PEARY AND HIS ESKIMO DOGS

Without these dogs, which are closely related to wolves, Arctic exploration would be infinitely more difficult. They are both powerful and intelligent, and when harnessed in teams are able to draw the heavy sledges over smooth ice at a high rate of speed.

"These rough notes and our dead bodies must tell the tale, but surely, surely, a great rich country like ours will see that those who are dependent on us are properly provided for.

"R. SCOTT.

"March 25, 1912."

Efforts had not been wanting on the part of those at Cape Evans to carry help to Scott and his companions. As they had not made their appearance as expected, efforts were made to find them.

The first relief party, composed of Garrard, a geologist, and Dimitri, a Russian dog driver, went out at the end of February. On March 3d Garrard and Dimitri reached One Ton Camp, but had to return on March 10th because of the poor condition of the dogs, lack of dog food and the awful weather. Captain Scott then was within 60 miles, or possibly 40 miles, of the relief party. Surgeon Atkinson and Keokane then made a short journey to Corner Camp and returned, "realizing they could be of no assistance."

The approach of the winter season made impossible further efforts to relieve Scott, but on October 30th, the Western Party having returned, a new searching party left Cape Evans in two divisions. The party, with Surgeon Atkinson in command, soon reached One Ton Camp, from which they proceeded along the old southern route, and on November 12th they sighted Captain Scott's tent.

Inside were found the bodies of the three heroes—Captain Scott, Dr. Wilson and Lieutenant Bowers. To the end they had carried all of their records with them, as was discovered by the searching party. Wilson and Bowers were found in their sleeping bags, where Captain Scott had placed them, while Scott was sitting upright against the pole of the tent with his diary behind his head, as if for a pillow.

Surgeon Atkinson read the burial service over the bodies and, after gathering together the records and effects of the dead men,

erected a cairn of snow and a cross over the tent in which the bodies were left buried. The cross bears the following inscription:

"This cross and cairn erected over the remains of Captain R. F. Scott, C. V. O., R. N.; Dr. E. A. Wilson and Lieutenant H. H. Bowers, S. R. N., as a slight token to perpetuate their gallant and successful attempt to reach the Pole. This they did on the 18th of January, 1912, after the Norwegians had already done so on the 14th of December, 1911.

"Also to commemorate their two gallant comrades, Captain R. E. G. Oates, of the Inniskilling Dragoons, who walked to his death in the blizzard willingly about 20 miles south of the place to try and save his comrades beset by hardship, and Petty Officer Edgar Evans, who died at the foot of the Beardmore glacier.

"The Lord gave and the Lord taketh away. Blessed be the name of the Lord."

Atkinson and his party then continued southward in search of the body of Captain Oates, which, however, they were unable to find. Locating the approximate spot described by Captain Scott in his diary as the place at which Oates perished, they erected this inscription:

Hereabout died
A VERY GALLANT GENTLEMAN,
CAPT. R. E. G. OATES,
Inniskilling Dragoons,
Who on the return from the Pole, in
March, 1912, willingly walked to his
death in a blizzard to try and save
his comrades beset by hardships.

The party then returned to Cape Evans, where they were picked up by the "Terra Nova," which returned to New Zealand on February 11, 1913.

CHAPTER II

Robert F. Scott, Antarctic Martyr

CAPTAIN ROBERT FALCON SCOTT, R.N., C.V.O., the intrepid Antarctic explorer who reached the South Pole thirty-five days after Roald Amundsen, but was lost, together with his party of four, in the endeavor to get back to civilization, was a man born to lead. He was a man of great physical strength, fearless, with a striking personality that exuded vitality and strength, yet one felt that he was a man of caution. He was never impetuous or headstrong, having too much consideration and sympathy to take unnecessary risks. If occasion demanded it, however, he would take any risk to attain his looked-for end. Captain Scott was a sailor, and one of the best type that the British navy has ever produced.

Captain Scott was born at Devonport, the famous naval station on the south coast of England, on June 6, 1868. He was the son of Edward Scott, and was educated at Stubbington House, Forham. At the age of fourteen he entered the British navy.

While a cadet on board the training ship he showed signs of leadership and was chosen as one of the five captains of his time from among sixty boys. These captains were the ones who proved themselves the most popular and efficient as leaders at sports. On leaving the "Britannia" he was sent to the Cape of Good Hope Station and from there returned after three years, tall, strong and manly, having outgrown all his clothes. His next station was in the Pacific, and from there he returned a lieutenant in the service, ready qualified to take up a special course of training, for which he chose torpedo work. After completely qualifying, he was again appointed to one ship

after another, pursuing the usual course that is followed by men of his standing.

When he had been eight years a lieutenant, and had gained his extra stripe, he was appointed torpedo-lieutenant on the "Majestic," a first-class battleship. Here he was among men of the highest promise in the Navy and was associated with a group of keen Arctic explorers, men who had served under Sir Leopold McClintock in the expedition to accomplish the Northwest Passage. A short time after Captain Scott's appointment, Captain Egerton, later Sir George Egerton, succeeded Prince Battenburg as captain of the "Majestic." He was very much in sympathy with all exploration work and the glamour of the North had always clung to him, so that he was an enthusiast on the subject.

Here came the turning point in Captain Scott's career in a truly romantic manner. Captain Scott's family was at this time in very great trouble. Several deaths and the loss of money had left him the oldest, and now the only, son in a position of having to help his people. He rose nobly to the responsibility, as he has always risen to it, and knowing well that a lieutenant's pay in the Royal Navy left no margin on which to support his family, he went to London to see by what means he could augment it and generally better matters.

Strolling along the streets of London, he met by chance that great old man, Sir Clements Markham, at this time chairman of the Royal Geographical Society. Sir Clements recognized Captain Scott as a midshipman in whom he had always been very much interested when he had stayed on his cousin's (Admiral Markham's) ship, and greeted him with great warmth. Sir Clements' great desire was to organize an expedition to explore the unknown Antarctic Continent. This object he had materialized at this time to the extent that a ship was being constructed to be called the "Discovery" for the purpose of ice exploration, and the scientific staff was being appointed.

Sir Clements, like all men who have an intimate knowledge of

the Royal Navy, was anxious to have a navy man in command of the ship, and had been promised one by the Admiralty, when by chance he met Captain Scott, or as he then was, Lieutenant Scott. He impetuously seized his arm, and while strolling along, unfolded his plans and urged Captain Scott to apply for the post. The latter demurred as he had no leaning to work of that character. However, to find a well-paid job was necessary, and one that did not interfere with his naval career was desirable. On the ground that one name added to the list of applicants would not matter, he sent his in with little or no hope of being successful. To his great astonishment he was chosen. He had every qualification, was of the right age, just 29, a healthy, strong, well-built man, standing 5 feet 9 inches, and had had no worse illness than an attack of measles at 17, and a touch of Maltese fever. He was just the man to undertake the strenuous work of such a position.

He now entered on what was the real work of his life, to prepare for the conquest of the Antarctic. He had a year's work of preparation. This was one of the hardest years in Captain Scott's life. It meant mostly office-work in London, a place abhorred by healthy sailors, men who crave fresh air and exercise. It was, however, one of the most important parts of the expedition, for on it largely depended success or failure in the future. Captain Scott set to it with the vigor and judgment he afterwards proved to possess to such a very great extent. He had now begun to be enthusiastic over the idea and what had been to him such a short time before an undreamed of scheme became a living reality. He set to work with a will to master all the details of planning such an expedition for three years, and of preparing the outfit for the voyage and for the landing parties.

He had a more difficult task still, namely, to settle on his staff. To the experienced explorer this is a sufficiently arduous task, but much more so to the young naval officer who had very little experience. He was given much well-meant and good advice, tendered

on all sides by young and old, expressed by able and intellectual men, but had to sift all this for himself. The trying difficulties were increased at this time by the fact that a leader had been appointed for the expedition, a very able scientist quite unaccustomed to exploration, who had been chosen to direct landing operations and the whole affairs of the expedition. This left Captain Scott as a cipher on the ship he commanded, to go when and where a non-nautical man directed, a position, of course, untenable for Captain Scott. The Royal Geographical Society, who number so many Arctic explorers among their members, saw the force of this argument and finally declared that Captain Scott must take supreme command, as he was responsible for the safety of the men and the ship. This led to the retirement of the scientist. From now on preparations went more smoothly, but they still required a sixteen-hour working day for the leader.

It was not an easy task to choose men with whom one had to live in closest fellowship for three years. The Admiralty were generous and allowed three of its officers, in addition to the leader, and twenty blue jackets and petty officers to join the expedition. These were mostly men who had sailed in the same ship with Captain Scott and were known by him. Thus he was able to assemble a staff who proved themselves in every way worthy of his choice by their achievements and characters, while he demonstrated his capacity for judging men. The last month was devoted to the final fitting out of the "Discovery," with all the necessary equipment for a stay of three years in the Antarctic, far from any kind of civilization.

At the time when Captain Scott first went to the Antarctic regions in 1900, it was not known that any food of any kind could be obtained there. This he found later was not the case. Seals, penguins and gulls provided good, fresh food. On June 28, 1900, the expedition was ready to start from the Thames. The ship had a very enthusiastic send-off, and as one watched the leader standing on the bridge while the ship slowly made her way from the East

India dock, one realized that the boyish young face meant work, and if humanly possible, success also. The "Discovery," a wooden whaler built for the expedition, made its way to Portsmouth and Cowes.

The honors now began to come to Captain Scott. His ship was honored by King Edward and Queen Alexandria, during which the leader was given a decoration by his majesty, being made a member of the Victorian Order. On the morning of August 5th, a windy, sunny day, a start was made for New Zealand, amid a following crowd of yachts and boats, all dipping their pennants, as the ship sailed on its way to the Southern seas. In spite of many difficulties the ship arrived safely at Cape Town, where Captain Scott had to show his character as leader by weeding out some of the members of the crew. There had been a case of insubordination on board during the voyage south, as the result of which Captain Scott dismissed the offender and wired to the Society that he had done so. This was an unexpected proceeding on his part as the offender was a man picked by the Royal Geographical Society for his knowledge of ice work.

Captain Scott now advertised for some one to replace the dismissed man, and had several hundred applications from the blue jackets in the fleet stationed at Cape Town where Scott was already well known as a smart officer and a good man to follow. From there the ship went on to New Zealand having to rough it in the terrible 40's.

At New Zealand, Captain Scott again had to make a change in his crew, but as before, was met with generous help from the Admiralty, so that on December 1, 1900, he had what he most desired, namely, his ship manned almost entirely by blue jackets accustomed to naval discipline, fine men who were to be thoroughly depended on. These, with the very able scientific staff, brought the ship's complement up to forty.

The two years which followed were full of adventures and

manifold hardships, not the least of which was the close chance of death by starvation many times and innumerable narrow escapes from other perils. Sailing from New Zealand on Christmas Eve, 1901, the "Discovery" ran down to the barrier, which Borchgrevink's expedition had noted thirty miles south of where it was recorded by the Ross expedition in 1842. Scott confirmed Borchgrevink's findings, but Scott discovered, where Ross had noted only an "appearance," a wide stretch of country, which he named King Edward VII Land. Scott explored more than 400 miles of the Great Antarctic Barrier, a wider stretch than any other Antarctic explorer.

The "Discovery" was laid up in McMurdo Sound, in latitude 77 degrees 49 minutes south, and longitude 166 east, and exploration was started on sledges. The outward journey of 380 miles to latitude 82 degrees and 17 minutes south occupied fifty-nine days. A little further south two peaks, Mount Markham and Mount Longstaff, named after the chief promoters of the expedition, were sighted. On November 30, Captain Scott covered a distance of 300 miles westward from the ship, reaching latitude 77 degrees 59 minutes south, and longitude 146 degrees 33 minutes east.

On Christmas Day, Captain Scott returned to the "Discovery," and on January 5, 1904, the "Terra Nova," the ship with which Captain Scott made his latest Antarctic expedition, arrived, with orders for an immediate return, even at the cost of abandoning the "Discovery." The expedition ship, however, broke loose from the ice on February 16, and Captain Scott had the satisfaction of taking her home in good order.

On his return to England, Captain Scott became the hero of the hour with honors showered on him from all over the world. It was at this time that he received his rank as captain, and the day after his promotion he was raised to be Commander of the Victorian Order by King Edward. From that time on he was the daily recipient of medals, diplomas, letters and congratulations from every

European country. He was also elected a fellow of the Royal Geographical Society. The gold medals of the Royal Geographical Society, the Scottish Royal Geographical Society, and the American, Swedish, Danish, Philadelphia and Antwerp Geographical Societies were also conferred on him for this expedition. The Universities of Manchester and Cambridge conferred on him the honorary degree of Doctor of Science. He has been known as a keen explorer, a scientist and an admirable leader, a man who always conducted his expeditions with the spirit of a sportsman and who never permitted his ambition to cloud his judgment. As a consequence, his expeditions were never marred by the bickering that has disgraced so many Arctic and Antarctic ventures.

Not even when Sir Ernest Shackleton, who was a subordinate officer in the "Discovery" expedition of 1901, made use of all he had learned under Scott in an independent expedition toward the South Pole, did Scott express jealousy of the mark of farthest south set up by Shackleton, though much of the success was due to him. Instead, he heartily congratulated the younger man, and waited until Shackleton had announced that he was out of the arena before he came forward with his own announcement that he would make another try for the Pole himself.

Those who knew Scott say that the bad feeling toward Captain Roald Amundsen, on the occasion of his discovery of the South Pole, which was displayed in England in 1912, would never have been tolerated or countenanced by Scott. He asked no favors from any man. All he wanted was a fair chance to do what he set out to do, and if any man could do it better than he, he was willing that the other man should have the credit. Quiet, well poised, slow of speech and somewhat retiring in disposition, he was a man in whom other men instinctively reposed trust, who was looked up to by his associates and who never found difficulty in getting men to follow him to the death.

In the wardrooms of many a British ship to-day the men who

sit about the mess tables will tell stories of "Bob" Scott and of things he did in the old days when he was a midshipman on the "Rover," or later, perhaps, on others of the King's ships.

In 1909 he turned his attention to the raising of funds to fit out another expedition, and this proved an almost superhuman task. However, with his usual perseverance he succeeded in raising sufficient money to justify the purchase of the "Terra Nova," the whaler that had already braved the Antarctic Seas when she went south in company with the "Morning" to the relief of the "Discovery," in 1902. Many people came forward with generous aid, but the task of collecting money for any scheme is not an easy one, and to a man of Captain Scott's temperament, whose dislike for publicity was strong, begging even for the cause of science, was abhorred. It had to be done, however, if funds were to be raised, and so putting self aside, he started to work. The result was to enable him to start south in 1910 with the best fitted expedition that ever embarked for the perilous Antarctic shores.

The immense confidence which Captain Scott inspired in his followers may be judged by the fact that all except three of his old party again volunteered to accompany him, and in the formation of the expedition he had more than 1,000 volunteers. It required all his judgment to select the fittest men.

The death of Captain Scott and the four men who went with him to the South Pole has shown the world that, in this age of supposed materialism, men of the Anglo-Saxon fibre still go to meet death unafraid, as one lies down to sleep and peaceful dreams. There is in Scott's last message no wail of despair, no word of complaint, only the prayer for protection for the widowed and the fatherless on the other side of the world. Yet that message was written when two of the five explorers were dead, and the writer and the two others were dying on a desolate plain in a blizzard, knowing that they were within eleven miles of plenty. The tortures of Tantalus were nothing compared with that.

Captain Scott writes with a hand and a mind as unshaken as though this were an address to be delivered before the Royal Geographical Society. "These rough notes and our dead bodies must tell the tale." It is not rhetorical fustian, the orator's swelling period, when he sets down with his cramped and stiffening fingers: "But for my own sake, I do not regret this journey, which has shown that Englishmen can endure hardships, help one another and meet death with as great a fortitude as ever in the past."

There at home was a little boy, too young when the father left to understand, putting little flags in a map and eagerly asking questions of his mother. When she started for New Zealand to meet England's hero and her own, the little boy said, "Mother has gone to bring him home, and then I am going to meet him at the station."

One thinks of men and women in gilded pleasure halls eating and drinking and making merry—one thinks of all the oblivious gaiety and the selfish cynicism of the epicure—and then in sharp and poignant contrast there comes a vision of a wide gray, dreary plain, and four men staggering, stumbling, pitching their forlorn bit of canvas, huddled under it and dying there, with the sleety blast wailing a dirge above them, instead of the organ in the cathedral, and the snow falling where there is no earth to cover even a fallen hero. And eight months later other men come and find them there, and the world speaks of them for a flitting hour and returns to its fleshpots and its foibles, its gossip and its interrupted games. But here and there, it may be, there is one who will remember the wife and child at home.

By his modesty no less than by his resolution Captain Scott had endeared himself alike to those who had served with him and to the public at large, and in the grief that his death has occasioned there is the personal note of sorrow far beyond the perfunctory mourning when "great kings return to clay, or emperors in their pride."

In 1908 Captain Scott married Miss Kathleen Bruce, daughter of the late Canon Lloyd Bruce. Mrs. Scott is a sculptor of some

repute. They have a fascinating son, Peter, who is the image of his father in looks, with all his health, vitality and intellect so far as one can judge in such a small person. When Captain Scott sailed on the "Terra Nova" the child was only eight months old. His first baby idea was to hug and cover up a photograph. "Keep Daddy warm," he said. After this, need any more be said about all Captain Scott has foregone to attain his object of conquering the Southern Hemisphere and rescuing some of its secrets from it?

CHAPTER III

First at the South Pole: The Thrilling Story of the Amundsen Expedition

N EARLY four hundred years have passed since the first recorded expedition set sail for the exploration of the Arctic regions, and more than one hundred and forty years have elapsed since the Antarctic circle was first penetrated. Taking into account the innumerable voyages that have been made into polar regions in this long period of time, the persistence, daring and skill of the explorers, and the financial and scientific support which they had behind them, one is able to form some idea of the almost insurmountable barriers that lay in the way of those heroic adventurers who have undertaken to gain the extremities of the earth. From this point it is easy to appreciate the elation and satisfaction with which the world received the news that, within three years after Admiral (then Lieutenant-Commander) Robert E. Peary discovered the North Pole, Captain Roald Amundsen, the Norwegian explorer, had succeeded in planting the flag of his country on the South Pole. This news was contained in a terse cablegram received in Christiania, Norway, by Lean Amundsen, brother of Captain Amundsen, on March 7, 1912, reading as follows:

“HOBART, TASMANIA,

“THURSDAY, March 7, 1912.

“Pole attained, 14th-17th December, 1911. All well.

“ROALD AMUNDSEN.”

The Amundsen expedition to the South Pole started out as a North Pole expedition. In April, 1909, Amundsen, already famous

as the first to take a ship from the Atlantic to the Pacific Ocean by means of the long-sought Northwest Passage and as an explorer of the region of the magnetic North Pole, published in the *Geographical Journal* and other papers, exhaustive details of a proposed North Pole expedition he was to undertake.

He left Norway, ostensibly to proceed by way of Cape Horn and Bering Strait to the North Polar Basin. The expedition was to take seven years. It was reported that he had trained polar bear cubs instead of dogs to draw him to the Pole. Suddenly, on arriving at Madeira in October, he announced that he had changed his plans and was going to do some sailing in the Antarctic. Nothing further was heard of him until March 27, 1911, when news was flashed to civilization from Stewart Island by Lieutenant Pennell, of the British Antarctic Expedition of Captain R. F. Scott, telling that he had come upon Amundsen's ship, the "Fram," in the Bay of Whales, where he had landed and set up winter quarters for a dash toward the South Pole.

News from Amundsen himself was received in June, 1911, in a letter dated February 9th, at Framheim, in longitude 164 west, latitude 78 degrees 40 minutes south. In it he told how, on a dark, hot evening in the Fuchal Roadstead, he laid before his expedition his plan for extending the programme by an attempt to reach the South Pole. As a man, he said, they voted in favor of doing so. He made the goal of the voyage the Bay of Whales, which indents the great Antarctic barrier in longitude 164 west and latitude 78 degrees 30 minutes south, a voyage of 16,000 miles from home. They expected to reach the barrier by the middle of January.

The "Fram" was a 400-ton gasoline auxiliary, and probably the strongest ship ever built for Polar exploration. She was only 113 feet long and 36 feet of beam. Her hull was made of four and five thicknesses of heavy timber, and at the bow was four feet thick, while at the stern three feet. It was in the "Fram" that Nansen made his "Farthest North" in 1905.

On the "Fram" each man had his own separate quarters, which, though only six feet square, were comfortable, warm and well lighted. A piano in the officers' quarters added to the entertainment of the voyage. Amundsen's cabin which was a little larger than the others was the same one which Nansen occupied in his voyage on the "Fram," and contained maps and plans for use on the trip to the Pole.

A canary which was named Fridtjof, in honor of Nansen, was taken along, and remained in good health and song on the "Fram" during the whole time.

The motor power of the boat consisted of an 80 horse-power petroleum engine, which proved exceedingly reliable, giving no trouble at all during the whole of the journey.

There were nineteen men aboard the "Fram" when Amundsen determined to try for the South Pole, and neither among them nor among his 115 Eskimo dogs was there a single ailment when, on better than schedule time, he landed at the edge of the barrier. On January 1st ice was sighted for the first time. The next day the "Fram" crossed the Antarctic Circle and the Antarctic drift was before her. The Great Barrier was sighted on January 11th, and on the following day the Bay of Whales, Amundsen's objective point, was reached. A landing place was found on January 14th, and then, the 16,000-mile voyage safely accomplished, Amundsen found he was a day ahead of his schedule.

After mooring his ship safely, he set about finding a place for wintering, about two and a half kilometers from the ship at the foot of a ridge well protected from southeast winds, and on January 16th he began to unload his cargo. It was hard work, but his 115 dogs, all picked and trained animals from Greenland, went to work with a will, and the task was soon accomplished. Three weeks later Amundsen described the scene as follows:

"It is three weeks since we began the building of our station, and now everything is ready. The desolate, icy landscape has under-



THE CREW OF CAPTAIN SCOTT'S SHIP

The men, many of them scientists, are seen working over their books at the long mess table. At the far end sits Captain Scott, the ill-fated explorer.



MRS. ROBERT F. SCOTT, WIFE OF THE EXPLORER, AND THEIR CHILD

The wife of the Antarctic martyr and her little son, in her studio. Mrs. Scott was on the way to welcome her husband when the news of the disaster was given to the world. His last words were a plea to the English nation to care for them.

gone a great change. The silence is broken. Where formerly only a solitary penguin or the track of a seal crossed the height, there now lies a little village. Our solidly built little house stands safe and secure, sunk four feet down in snow as hard as rock, and supported by backstays on all sides. We have given it the name of Framheim. Its longitude is about 164 degrees west, its latitude 78 degrees and 40 minutes south, so that it is probably the most southerly human habitation. Round it are set up fifteen tents large enough to accommodate sixteen men each, for the use of the dogs, and as storehouses for our provisions, coal, wood, clothing, etc. The principal food depot is about a kilometer from the station and contains provisions sufficient for two years. Since we came here we have lived almost entirely on seal meat, and would not exchange seal stew for any dish in the world. There are a great number of seals here, and we shall soon have prepared enough both for ourselves and our dogs for the winter.

"In a few days the 'Fram' will be ready to leave us. She goes north with greetings and messages and we shall begin our journey toward the south. It is my intention to lay down a main depot in 80 degrees latitude, and a smaller one as far south as possible, and I hope that with the excellent means at our disposal we shall get to 83 degrees with the smaller depot as early as the autumn, before the dark season sets in. I can say nothing more with respect to our future prospects. We shall do what we can."

Amundsen's plan was for the "Fram" to return to the Antarctic to pick up the explorers in October, 1911, which was the month in which Captain Scott of the British Antarctic Expedition had originally intended to start his dash toward the South Pole. Captain Scott's ship, the "Terra Nova," found the "Fram" in the Bay of Whales on February 4, 1911, when the Norwegian shore party of eight men and 115 dogs had not yet started their march south, but were presumably about to begin it.

On February 10, 1911, the party began the heavy task of mov-

ing their supplies inland as far as possible for the establishment of depots on their path to the South Pole. At latitude 80 degrees, Amundsen established the first of these depots where he deposited about 1,600 kilos of provisions, a kilo being equivalent to a trifle more than half of a pound. This included 1,100 kilos of seal meat.

In latitude 81 degrees the second depot was established, where 700 kilos of provisions were cached, while the third depot at latitude 82 degrees was supplied with 800 kilos. The work of supplying these depots was lightened by the excellent weather which Amundsen and his companions encountered and by the good condition in which they found the surface of the barrier. On March 4th the party returned to the Bay of Whales, where they found that the "Fram" had already returned to Australia for the winter.

Before turning northward the captain had sailed in the "Fram" to a point farther south than had ever been reached by any other vessel, thus establishing a unique record in that the same boat, with Nansen in 1905, had made the most northerly point of any vessel.

Everything was then snug for a long, dark winter, and by the middle of April the little hut which housed the men was almost entirely covered by snow. By the use of a special 200-candle-power lamp, with which the expedition was provided, the hut was brilliantly lighted and the temperature maintained at about 68 degrees Fahrenheit throughout the winter. In addition the building was well ventilated, so that the men were both comfortably and healthfully housed. So well were the arrangements provided for the winter's stay that direct communications had been made between the hut and workshops, packing rooms, provision cellars, observatories, etc. A plain bath and a steam bath were also installed.

From April 22nd the sun was invisible for four months. This time was spent largely in rearranging and simplifying the outfits to be carried by the men on the trip south. The snow fall was comparatively little and in other respects the weather conditions were good, so that the arrival of the sun on August 24th found Amundsen and his companions in both good spirits and good health.

The start south was delayed until the weather became warmer. On September 8th a party consisting of eight men, with seven sledges drawn by ninety dogs and carrying provisions for four months, left for the first depot at latitude 80 degrees. The weather was ideal when the party left the winter camp, but the following day proved that too early a start had been made, for the weather again turned extremely cold, and after going on for a few days it was evident that while the men with their heavy clothing could stand the cold, it was too much for the dogs, which clearly showed by their condition that they were suffering from the low temperature. Accordingly the provisions which the party carried were cached and the party returned to the winter camp, but not without the loss of a few dogs.

No further efforts were made to reach the depot at latitude 80 degrees until the appearance of seals and birds in the middle of October gave evidence that spring had really set in. The temperature then varied between 4 degrees and 22 degrees Fahrenheit.

At this point a material change was made in Amundsen's original plans, so that instead of including all of the eight men of the party in the trip south, this number was reduced to five; the other three men making a trip eastward to visit King Edward VII. Those composing the southern party were Captain Amundsen, Helmer Hansen, Oscar Wisting, Severre Hassel and Olaf Bjaaland. Hansen is described by Amundsen, as the best dog driver he ever saw, while Bjaaland is a most expert ski-runner.

Finally on October 20th the start was made for the Pole, the five men taking four sledges and fifty-two dogs with provisions for four months. The early part of the journey was made in easy stages in order to condition the dogs gradually to their work. The depot at latitude 80 degrees was reached in three days. Here the dogs were rested until the 26th, when the march was resumed, and on the 31st the party arrived at the depot at latitude 81 degrees. There only one day was spent in rest, and with daily marches of about

thirty miles the depot at latitude 80 degrees was reached on November 5th. Here for the last time the dogs were allowed to eat all they wished and on November 8th the last of the three depots was left behind in Amundsen's advance toward the Pole.

On the journey to the Pole Amundsen tried a new plan of traveling fifteen miles in five hours, spending two hours in eating and in feeding the dogs, and seventeen hours in rest and sleep. It was found, however, that this period of seventeen hours was entirely too long for both the dogs and the men. The programme therefore was changed to include a fifteen-mile march in about six hours, followed by two hours for meals and feeding the dogs, and a six-hour sleep, after which the party breakfasted and again took up the march. This latter plan proved highly satisfactory in providing the men and animals with sufficient rest to keep them in good condition, and at the same time accounts for the very rapid progress, averaging twenty miles a day, which they made on the journey to the Pole.

In an endeavor to lighten the sledge loads, smaller depots were established at each degree of latitude. From longitude 80 degrees to 85 degrees the conditions were ideal. On November 9th the party sighted South Victoria Land and the mountain range which Shackleton had discovered to the southeast of the Beardmoore Glacier. Three days later it was found that the Ross barrier terminated at latitude 80 degrees south in longitude 163 degrees west, where it was met on the one side by the mountains of South Victoria Land running southeast, and on the other side by a chain of mountains running southwest which Amundsen supposed to be the continuation of King Edward VII Land.

At latitude 83 degrees the party suffered a loss through the desertion of three of the best dogs, which turned back in search of one of their companions that had been killed at latitude $82\frac{1}{2}$ degrees. This desertion created considerable anxiety for fear the dogs would attack the depots in search for food. It was found, however, on the return journey that the depot at latitude 83 degrees

was untouched, although fresh dog tracks were seen. At latitude $82\frac{1}{2}$ degrees it was found that the deserters had eaten the carcass of the dog which had been killed, but apparently had touched nothing else. At the depot at latitude 82 degrees, however, where a number of cases of provisions had been cached, the dogs had broken open a case of pemmican, and had not only eaten the contents, but had also eaten such indigestible articles as leather straps. Here also they had found and eaten the carcasses of two other dogs which had been killed and left at this station for food on the return journey. No further traces of the three deserting dogs were found.

Latitude 84 degrees was reached on November 13th, and latitude 85 degrees three days later. Here another depot was made where thirty days' provisions were left, Amundsen and his party taking forward with them provisions for sixty days. It was now necessary to surmount the barrier. The climb was started on November 18th and proved to be no easy task, although the first part was accomplished much more readily than the latter part, where some very steep glaciers were encountered—so steep in fact that it was very difficult for the men to use their skis.

In order to drag the sledges up the glacier it was necessary to harness twenty dogs to a sledge, and take the four sledges up in two trips. Notwithstanding these difficulties an ascent of 4,500 feet was made in two days. On the third day it was necessary to descend the great Axel Heiberg's Glacier which lay between the coast mountains and another chain farther south. On the fourth day a second climb was commenced. Here many detours were necessary in order to avoid the crevasses in the ice. These were particularly treacherous as many of them were closed at the top, and frequently the dogs broke through the surface unexpectedly. The end of the hard day's work found the party at a height of 5,000 feet, where camp was made. From this point the sight was one of impressive majesty. On one side was the Fridtjof Nansen Mountain and on the other side was the Don Pedro Christopherson Mountain, each about 15,000

feet high, while at the foot of the glacier which lay before the camp was Mount Ole Englstad rising 13,500 feet. Across the glacier and up a further ascent of 5,600 feet, the dogs made a remarkable trip of over twenty miles in one day. This brought the party to a height of 10,600 feet, where bad weather necessitated their stopping four days. During this time twenty-four of the dogs were killed on account of lightening sledges and to provide food for the remaining dogs.

At latitude $84\frac{1}{2}$ degrees, where one of the snow cairns was built as a guide post for the return journey, two sky gulls were noticed. As the party took up the journey again the gulls flew past and alighted on the cairn.

On November 28th, in a blinding snowstorm which made it practically impossible to see ahead, the party continued by dead reckoning to latitude 86 degrees, but not without having their faces badly frozen. The following day, however, it cleared beautifully, and from the foot of the Devil's Glacier, which the party had reached, another hazardous climb was made. Three days' work was consumed in the ascent of the treacherous surface, which brought Amundsen and his companions to the edge of what appeared like a frozen sea. Progress on this rough surface, to which the name of the Devil's Dancing Room was given, was very difficult. On December 6th the party reached its greatest height, 10,750 feet, at a point in latitude 87 degrees 40 minutes. Two days later, or on December 8th, the weather again cleared and allowed the taking of observations which proved that the dead reckoning by which the party had proceeded was entirely accurate. This was in latitude 88 degrees 18 minutes 16 6-10 seconds, which brought them to the beginning of a perfectly level plateau.

At Shackleton's farthest point south, 88 degrees 25 minutes, the last depot was made and from here the plateau sloped easily and smoothly toward the Pole. From this point the surface of the plateau, the excellent weather conditions and the splendid con-

dition of the dogs and the men made progress easy and rapid. Eighty-eight degrees 39 minutes was reached on December 9th; 88 degrees 56 minutes on December 10th; 89 degrees 15 minutes on December 11th; 89 degrees 30 minutes on December 12th, and 89 degrees 45 minutes on December 13th. On the following morning the party set out with the expectation of reaching their goal that day. At 3 o'clock in the afternoon they reckoned that they were at last at the Pole. A stop was made and a beautiful silk Norwegian flag was planted on the spot. On the 15th a series of observations showed that their location was 89 degrees 55 minutes. The remaining distance of about five and one-half miles was traveled to bring them exactly to 90 degrees south. The 16th and 17th were spent in further observations to confirm their position and in exploration of the vast plateau, which Amundsen named King Haakon VII Plateau. A tent was securely erected over which the Norwegian flag and the "Fram" pennant were floated, and this spot was named "Poleheim," or "Home of the Pole."

Captain Amundsen states that there seems to be little limit to one's eating powers during a hard sledging journey in the Polar regions. While the men were able to indulge in full rations during the whole of the trip to the Pole, this was very different under the circumstances from having as much as they could eat. On the return journey, however, it was possible for the men to eat their fill from the provisions at the depots after passing latitude 86 degrees.

Amundsen and his companions were more or less affected by the extreme altitude in which a large part of their journey was made. The Pole itself is at an elevation of 10,500 feet, and for six weeks the explorers were never much below this height, while part of the time they reached altitudes of as much as 16,750 feet. As a result of the rarity of the atmosphere at these elevations the men, at times, experienced considerable difficulty in breathing, especially when engaged in hard work.

The start northward was made on December 17th. Christmas Day was celebrated by a hard day's march but with an extra allowance of biscuits cooked in a porridge. Early in January the victorious Amundsen, with his elated companions, must have passed very close to Captain Scott, who with Wilson, Oates, Bowers and Petty Officer Evans was still advancing toward the goal from which Captain Amundsen was returning. The excellent weather and surface conditions made Captain Amundsen's return journey easier than the trip south, and with an average daily speed of about twenty-two miles, the winter quarter at "Framheim" were reached on January 25, 1912, with two sledges and eleven dogs.

When Amundsen and the others went aboard the "Fram," they left their winter camp in perfect order, with fuel in the stove ready to be lighted, the lamps filled and the table set. A good supply of food was also left in the depot to give aid to any explorers who might be in need of it. The house was securely closed, so that no damage was anticipated from the missing dogs.

Amundsen's chief reason for leaving the hut in this prepared condition was his belief that the Japanese Expedition, which was already encamped on the barrier when the "Fram" turned homeward, would likely pass in the neighborhood of his winter camp.

The Eastern party, on leaving the winter camp shortly after Amundsen, traveled south to latitude 80 degrees in the track of the Pole party, but at this point they turned to the east for a distance of sixty miles. Here they reached Cape Colbeck, and from there traveled northward 120 miles without sighting land.

At latitude 78 degrees, however, they were able to confirm Scott's description of the boundary of King Edward VII Land. Here they ascended 1,000 feet in fifteen miles, and on November 24th came in sight of Ross Sea, which they found navigable in spite of the drifting ice.

The party then went seventy miles to the northeast where they came to the bare rocks, 1,500 feet in height, which Captain Scott

had described. Here also they saw the Alexandra Mountains, named by Scott, consisting of low hills to the eastward. From this point they returned to the winter camp on the Bay of Whales, which they reached on January 11th, two weeks before the return of Amundsen and the southern trip.

On board the "Fram" they left the Bay of Whales on January 9th and reached Port Hobart, Tasmania, on March 7th, bringing with them some splendid geological collections from King Edward VII Land and South Victoria Land as trophies of their successful expedition, which beside resulting in the attainment of the South Pole, had established a number of other important geographical results, such as the determination of the extent and character of the Ross Barrier and the discovery of the connection of South Victoria Land and probably King Edward VII Land.

CHAPTER IV.

Roald Amundsen, Intrepid Discoverer of the South Pole

ROALD AMUNDSEN, who was only in his fortieth year when he discovered the South Pole, has long been considered one of the most competent of the Northern explorers. He is the first and only man so far to accomplish the long-attempted feat of taking a ship from the Atlantic to the Pacific Ocean by way of the Northwest Passage, which is the route Columbus was looking for when he accidentally found America. Amundsen made, at a point within a short distance of the magnetic North Pole, the only set of complete polar magnetic observations taken before Peary's discovery of the North Pole. These achievements were accomplished in 1903 and 1905.

Amundsen was born in Sarpsburg, Norway, on July 16, 1872, and in his childhood moved, with his parents, to Christiania. His father was Jens Amundsen, a skipper; his mother's maiden name was Sahlquist. His parents destined him for the medical profession, but after studying medicine for one year at the University of Christiania, on the death of his mother, he went to sea at the age of nineteen, cruising for several years as a whaler and sealer on Norwegian vessels.

Captain Amundsen is of more than average height, and while not heavily built, is broad-shouldered and very strong. His face has more of the characteristics of a student than of a sailor and explorer. His nose is aquiline and his hair is light and heavily traced with gray. His most notable feature is his small, piercing, blue eyes, which give a clue to the indomitable courage and persistence of the man. He has never married.

He had his first real taste of exploration when, in 1897, he went as an officer with the "Belgica" on Gerlach's Belgian South Polar expedition. It was this trip, which lasted from 1897 to 1899, that filled him with aspirations to make discoveries in Arctic regions, and especially to re-locate the north magnetic pole and to discover the long-sought Northwest Passage. First he decided to prepare himself by studying two years in Hamburg under Neumayer, the expert on magnetism, and finally at Wilhelmshafen under Borgen in the Meteorological station.

Then he proceeded to raise the modest funds for his expedition. A large part of the \$30,000 was Amundsen's own money. Fridtjof Nansen, the Norwegian polar explorer, a close friend of Amundsen, helped him raise another part.

Amundsen was finally able to put out from Christiania in the "Gjoa" on June 17, 1903, with a total company of six men, the second in command being Lieutenant Godfrey Hansen, of the Danish navy. His ship was a seventy-five foot, forty-seven ton Norwegian sealing sloop, of which the cabin was only nine by six feet, and which was fitted with a petroleum engine of thirty-nine horse-power for use in calm weather.

Amundsen sailed around the north end of America, reaching the mouth of the Mackenzie River about September 3, 1905, and then passed through Baffin's Bay and Lancaster Sound, and worked his way down the west side of Boothia Felix in August, and took up winter quarters in Gjoa Harbour at the head of Petersen Bay in King William Land. Here the little vessel remained for two years while magnetic and meteorological observations were carried out, and sledging excursions were made to the magnetic pole and along the coasts of Victoria Land, which was charted up to 72 degrees north. In August, 1905, the "Gjoa" proceeded westward along the American coast, but was frozen in off King Point for a third winter. On the 11th of July, 1906, she got free, and after much difficulty with the ice, reached Bering Strait on the 30th of

August and entered the Pacific, the first ship to pass from ocean to ocean north of Patagonia.

The Northwest Passage trip brought Amundsen great renown, but soon afterward he turned his thoughts toward the North Pole, and announced his plan of drifting around the polar sea. He received strong backing from his countrymen, King Haakon, of Norway, heading the list of subscribers in support of his project.

The character of the man was luminously shown by his generous attitude toward his English rival, Scott, which he displayed even before the latter's untimely death was known, and which was in gratifying contrast to the jealousy that other explorers have sometimes felt and expressed toward those who might appear as claimants for a share of their hard-earned glory. The spirit of the man of science ought to be that of the musician who was sufficiently large-minded to say of a fellow artist, "We are not rivals; we are both artists." Amundsen uttered not merely the opinion, but the hope, that Scott reached the Pole as well as his own party. "I most sincerely hope he did arrive there, for he well deserves success." He also said, "It is exceedingly likely that Captain Scott did reach the Pole later, if not sooner, than myself."

Amundsen was criticised as lacking in the spirit of fair play, at least of sportsmanship, when he suddenly altered the course of his North Pole journey and directed the prow of the sturdy "Fram" to the opposite extremity of the globe. But the reason is plain. Word had come of Peary's achievement. That prize was taken. The Norwegian saw no reason why he should not make a long detour into the Antarctic zone, which is not the privileged hunting ground of any nation or any individual, and afterward go northward again. Furthermore, he had spent every crown he could borrow in fitting out his expedition. It was necessary for him, having staked his all, to recoup himself by a profitable venture, and the first attainment of the South Pole would, from this point of view, be more profitable for him than to be second in the "frozen North." Such

practical considerations may be rejected as unworthy by intellectual idealists, but they have to be borne in mind by poor men embarking upon ambitious and costly exploring ventures.

The willingness of Amundsen to share the laurels extended not merely to possible rivals in the field, but to those who spent with him the hungry and shivering bivouacs on the ice-sheet 10,000 feet above the sea. He took all his men with him the whole distance. He seems to have thought that there was credit enough to go round, and that those who endured the burden and cold of the day and the night beside him deserved to stand with him at the goal. The world can have nothing but praise and admiration for a man so brave and generous.

In many respects Amundsen stands head and shoulders above all other polar explorers. He is one of three who succeeded in reaching the earth's axis, and of two who managed to return from that goal. He is the only one who has won preëminent fame both in the Arctic and Antarctic Circles. As the sole navigator of the Northwest Passage, and the only explorer to return alive from the South Pole, he occupies an exalted position in history that needs nothing to add to its altitude.

CHAPTER V

Shackleton on the Threshold of the South Pole

THE year 1909 ranks as a record one in polar research. Early in that year the word was flashed north that a daring investigator had gone far to rob the far south of its mystery, approaching almost within touching distance of the South Pole. And in September of that year was flashed south still more startling news, to the effect that two equally daring investigators had knocked at the door of the far north, and stood upon the spot where the North Pole should penetrate the earth, if there were any visible form to this geographical figment.

We are here concerned with the first of these discoveries, that relating to the South Pole. That both these extremities of the earth's axis would before long be reached was as certain as anything could be. For a generation explorers had been approaching the North Pole step by step, learning the best methods and the necessary equipment for the enterprise, and tracing the most suitable starting place. The problem had reached that stage in which a bold dash was alone needed for its completion.

In the south progress towards the Pole had been much slower. Not until the closing years of the nineteenth century had a human foot been set on the land adjoining the polar region. But important discoveries had been made. There was much reason to believe that a continental area of land surrounded the Pole, instead of an ocean of water, as seemed the case in the north. This, if it should prove a fact, would vitally change the conditions. The ice ridges and open leads of water which formed the great difficulty in the north

could not exist on a land surface, and though this might present difficulties of its own, those which troubled the north polar explorer would not be met.

There were, doubtless, wide stretches of ice and snow to traverse, there was a fearfully low temperature to endure, there might be mountainous elevations to climb and cross, but the lessons learned in the north could be applied in the south, the best kind of Arctic dress could be worn, the sleeping-bag could be used, the dog sledge could be employed, the most easily carried food could be taken, and besides these only pluck and endurance seemed needed to win victory in the great battle with the hostile forces of ice and cold.

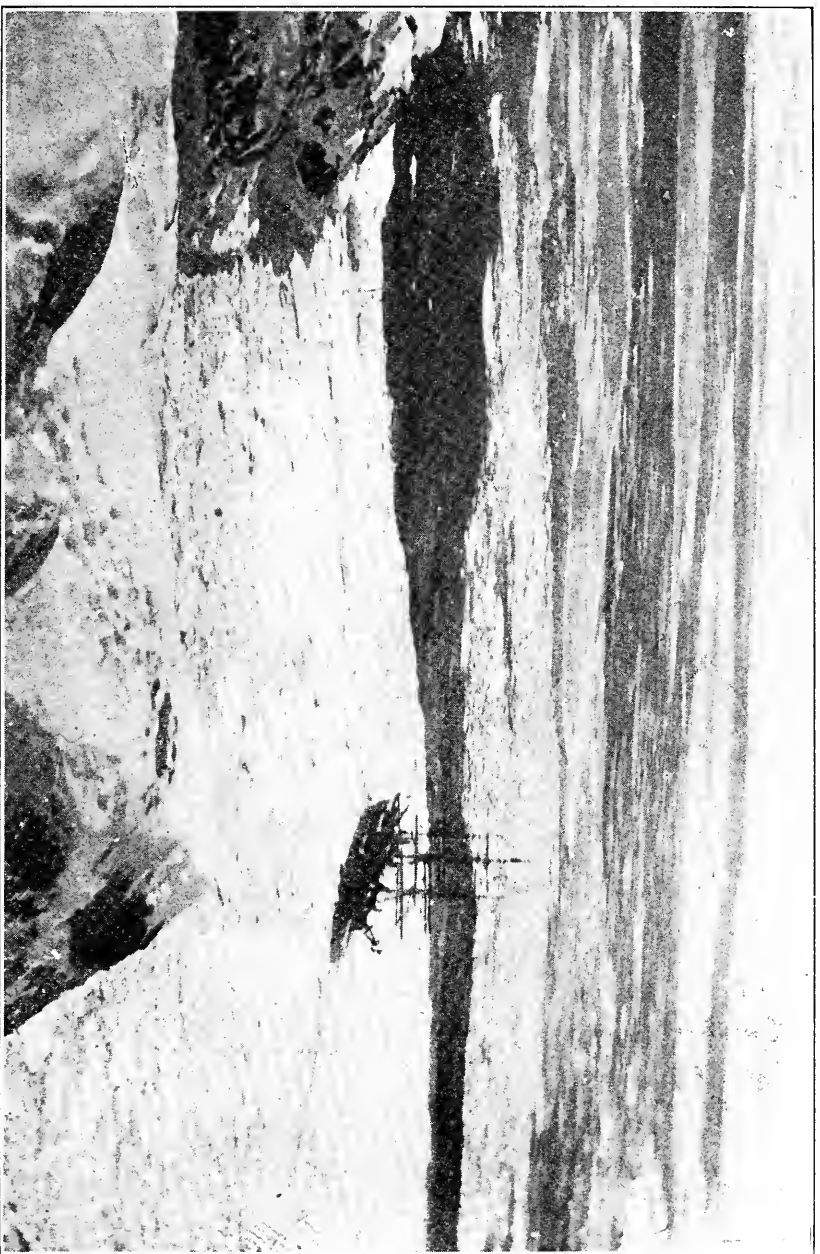
The first step in this work was taken by Borchgrevink in 1900, in his pioneer sledge journey over the southern ice. He was followed two years later by Captain Scott, whose journey over the ice occupied ninety-four days and covered not less than a thousand miles. With him on this daring excursion was Lieutenant Ernest H. Shackleton, like himself an officer of the British Navy, and a man of inflexible will and courage. An instance of this was shown on the trip in question, in the latter part of which the three men of the party had to take the place of the dogs in pulling the loaded sledges. In this severe work Lieutenant Shackleton ruptured a blood-vessel, which unfitted him for pulling and even for walking. Yet the other two were quite unable to add his weight to the load they already had to drag, and if they were to reach the ship alive he would have to walk. With heroic determination the brave fellow nerved himself to this painful task, heroically trudging after them on foot, and complaining only that his injury prevented him in taking his part in their work. Of such metal as this heroes are made.

Shackleton was not long home before the Antarctic problem called him again, and he began to prepare for a south polar expedition under his own leadership. The experience gained in his former journey was of the greatest value to him and he believed

that he had learned the true way to attain the Pole. He proposed, as before, to make his final dash with a party of three, and to add to the dogs a number of the hardy Manchurian ponies, of which ten were taken with him. But the great innovation of his proposed journey was the use of a motor car, one especially adapted to rough traveling in a cold climate. Having no hummocks or ridges to deal with and no open water to cross, he believed that such a car could be successfully used, and felt sure that it would add greatly to the ease and progress of his journey. King Edward VII Land, near the point of Borchgrevink's farthest south in 1900, was selected by him as a starting point and the expedition set sail in 1907; fifteen men composing the party. As in the two former expeditions, it was proposed to have the ship land the exploring party at the desired locality and return to warmer climes, coming to seek them again during the following summer.

Setting out in the "Nimrod" in 1907, the explorers on reaching the Antarctic Seas found themselves subjected to hostile polar weather. While seeking a suitable place to land their ship was assailed by fierce winds, through which it labored with difficulty, the party suffering great hardship in this encounter. As it proved, pack ice prevented the "Nimrod" from reaching King Edward VII Land, and they were obliged to seek winter quarters at Cape Royds, on Victoria Land, in the vicinity of Mt. Erebus, twenty miles from where the "Discovery" party had wintered. Here their stores, implements and animals were unloaded, a terrific blizzard assailing them during three days of this time, by which so much sea-water was thrown ashore, freezing as it fell, that the stores landed were buried in five or six feet of ice. The work of landing completed, the "Nimrod" steamed away on February 22, 1908, leaving the little party to its winter duties and diversions, if any could be found.

While the work of preparing for the coming season of cold was in progress a party of three, with a supporting party of three more, provisioned for ten days, was sent out to try the ascent of Mt. Ere-



PEARY'S SHIP CAUGHT IN A GREAT ICE FIELD OF THE NORTH

To have his ship surrounded by a great expanse of broken ice, or to be frozen in by the formation of new ice, is the common experience of the Arctic explorer. Peary's vessel is seen here in this hazardous predicament. The view also gives some idea of the grandeur and extent of Arctic scenery.



McMillan. Borup. Gushue. Henson.

LEADING MEN OF PEARY'S PARTY ON THE SLEDGE WHICH REACHED THE NORTH POLE

Some of Commander Peary's principal assistants in his great dash for the North Pole are here shown dressed in Arctic costume, seated upon the sledge which carried the Commander over the long sledge journey, and with which he reached the North Pole. The names of the quartette reading from left to right are Professor McMillan, George Borup, Gushue, mate of "The Roosevelt," and Matt Henson. The latter, who has been Peary's personal attendant for many years, and an expert sledge maker and driver, holds in his hand the long whip with which the Eskimo dogs were lashed to their best speed.

bus. After several days of hard climbing, in which a violent wind storm added to their difficulties and dangers, the whole six reached the summit of the volcano and gazed over the crater's edge. Here they found themselves on the lip of a huge and steaming abyss, while the air was filled with the fumes of burning sulphur. The steam was hurled up in great, globular volumes, preceded by a low, hissing sound and then a booming roar. A breeze sweeping away the steam for a few minutes, the depth of the crater—eight to nine hundred feet—lay revealed, while its width seemed about a half mile. On the crater's floor the steam puffed upward from three well-like openings.

In their return the party made progress by sliding down the ice slopes, traversing five thousand feet in four hours; but their clothes were much the worse for this hasty descent. They had found the height of the mountain to be 13,350 feet.

This conquest of Mt. Erebus, whose huge sides had previously been ascended only about nine thousand feet, was one of the alleviations of the long southern winter. Another was the exercising and finding the pulling capacities of the ponies, the sledges being loaded and drawn two miles daily up and down on the sea-ice. It was found that 650 pounds for each pony was the best weight for their pulling powers, while the exercise brought them into excellent condition for their coming work. The sledges were also got in the best order, and as spring approached the ponies were hardened for their coming duties by more active exercise, such as hauling the coal supply and other work. The dogs also were got into condition for their coming duties, and the motor car was tried upon the sea-ice, where it worked satisfactorily, alterations being made in it to reduce its weight, all superfluous gear being taken off. Before testing this car upon the land surface, however, a party of three started on a brief journey south to examine conditions, and concluded then that they were such as to render the car unavailable. This was owing to the very heavy snowfall, which was much greater than on Shack-

leton's former experience in the "Discovery"-expedition. This intended adjunct of the expedition, therefore, had to be given up.

The first step towards the polar dash was taken in September, it consisting in the forming of a food depot. There were six persons on this trip, the sledges being hauled by hand and each man's load being about one hundred and seventy pounds. The depot was formed in latitude 76 degrees 36 minutes, at a distance of about one hundred and forty miles from the winter camp.

On September 22d a party of three set out on an expedition as important in its way as the search for the Pole, its purpose being to locate the south magnetic pole, whose position had never been definitely fixed, though a close approximation to it had been made. This party consisted of Professor David, the geologist of the expedition, with two others of the scientific corps.

It was mid October before everything was ready for the main expedition, that having the South Pole for its goal. The food supply had been fixed, consisting of pemmican, biscuits, cheese, chocolate, sugar, tea and some other articles, the daily ration to be thirty-two ounces per man. Of the ten original ponies only eight had been landed and of these four had died from a proclivity for eating sand—leaving but four of the original number.

The party for the Pole finally got off on October 28th, it consisting of four persons, Shackleton himself, Dr. Marshall, the surgeon of the expedition; Lieutenant Adams, the meteorologist, and Frank Wild, who had charge of the dogs and sledges. Provisions were taken for ninety-one days, with a smaller supply for the ponies, with the idea that they might find it advisable to use some of these animals for food. A supporting party provisioned for fourteen days accompanied them.

Troubles soon assailed them, one of the ponies laming itself and a blizzard keeping them prisoners for several days. The next trouble came when one of the ponies sank through the snow cap of a hidden crevasse, carrying Adams down with it. An apparently

bottomless cavern lay below, and though Adams and the pony were rescued, their escape from death was very narrow.

Day after day they trudged onward, with no small trouble and hardship, the seemingly level plain being on all sides seamed with crevasses, often lightly covered with new snow, so that the utmost vigilance was needed to avoid them. A second depot was made in latitude 81 degrees 4 minutes, and here one of the ponies was killed. This was done from the fact that the animal rations were running short, and fresh meat was needed, both for the depot and to carry with them. A sledge was left to mark the spot, it being sunk in the snow so that eight feet projected above the surface. To it a bamboo pole with a black flag was attached. But the surrounding viewpoints of the country were chiefly trusted to for finding the depot, careful observations of them being taken. Two other ponies were subsequently killed for the same purpose, and new food caches made.

On November 22d a range of ice-clad mountains was seen, with a bare peak at intervals. Their position was such that some way up them would have to be found if the Pole was to be reached. As they went on towards them the snow grew very soft, the ponies at times sinking in it to their bellies. On they marched, gradually ascending, and finally reaching a glacier which they hoped might lead to the Pole itself. Up this their subsequent course lay.

On December 2d they very nearly met with a tragedy, a shout for "Help" from Wild calling them in haste to his assistance. When they reached him they saw that the forward end of the pony sledge projected over a crevasse, Wild grasping it and hanging over the gulf. No sign of the pony was visible. Wild was aided to escape from his dangerous position, but the pony was gone, and the man's escape was almost a miracle. The loss of the sledge with its load would have been almost fatal to them, and though they now had to draw it themselves, they were thankful that they had it to draw.

By December 9th they were in a perfect nest of crevasses, some covered with snow so as to be very deceptive. Marshall went

through one of these and was only saved by his harness, and soon after Adams and Shackleton had similar experiences. The glacier they were ascending seemed everywhere seamed with cracks, many of them probably a thousand or more feet deep.

On and on they went, constantly beset with difficulties and frequently with dangers. On December 17th the plateau they were seeking—here about 6,000 feet high—came in sight, and their difficulties seemed over. And here Wild found some geological specimens that, on their return to the ship, proved to be coal. There were several seams of this useful mineral, from four inches to eight feet in thickness. Still on they marched, dragging their sledges and ascending steadily, their food in time running so low that they had to reduce themselves to nearly starvation rations.

On January 6, 1909, they reached latitude 88 degrees 7 minutes south, and camped in a blizzard. For the next sixty hours the wind blew with a speed of seventy to eighty miles an hour, while the thermometer at times went down to 70 degrees below freezing point.

The situation was serious. To advance in the face of that wind was impossible, and with their rapidly diminishing food supply it was almost suicidal to venture farther. But on the 9th, when the blizzard began to break, they made another desperate rush forward, and at 9 A.M. reached latitude 88 degrees 23 minutes. Here the British flag was hoisted. The end was reached, with the Pole only one hundred and eleven miles away. Before them stretched still the endless white plain which they had traversed so many days, and they could but conclude that the South Pole was situated on this immense plateau, more than ten thousand feet above the sea level. A photograph of the party and of the floating flag was taken; they took possession of the plateau in the name of the British king; then they turned their faces north again, having done all of which flesh and blood was capable.

With the return of Shackleton and his companions we shall deal

far more briefly. They had simply to follow the path traversed in going out, with a blizzard now blowing at their back and helping them to the rapid progress of from twenty to twenty-nine miles daily. Their ponies were all gone, the one that fell down the crevasse being the last, and for a month they had been obliged to draw the sledges by hand. On the return there was but one sledge to draw and this became lightened by the gradual exhaustion of the food supply. Several times on the return trip their food gave out, but in each case they fortunately reached a food cache in good time to restore it. Yet the continual dependence on horse meat produced dysentery, which by February 4th prostrated the entire party. The southern blizzard, however, continued to help them onward, and on March 4th they succeeded in reaching the ship, which was now awaiting them. The length of the entire journey, including relays, was 1,708 miles and the time occupied 126 days. The results, in addition to the polar record, were the discovery of coal measures, the making of a complete meteorological record, and the discovery of eight distinct mountain ranges and more than a hundred mountains.

Meanwhile the party sent in search of the Magnetic Pole had succeeded in locating it in the vicinity of latitude 70 degrees 25 minutes south, longitude 15 degrees 4 minutes east. The "Nimrod" had reached the camp in time to meet the two parties on their return, and they soon set out for home. On the voyage northward they discovered a new range of coast mountains on what was apparently an extension of Victoria Land towards Wilkes Land. Thus the disputed discovery of Captain Wilkes was confirmed. Shackleton had blazed a track to the vicinity of the South Pole.

CHAPTER VI

Previous Attempts to Penetrate the Antarctic Region

THE Arctic Region had been a field for explorers searching for a passage to the East for centuries before any attempt was made to explore the South Polar Zone, yet the discovery of the latter was in reality the more direct result of the main trend of geographical exploration. The early Greek geographers were familiar with the fact that the new world covered only a minor part of the Northern Hemisphere, and they realized that there was a vast field awaiting exploration in the Southern Hemisphere, with Torrid, Temperate and Frigid Zones, corresponding to the climatic regions which were then known in the Northern Hemisphere.

While excursions were made into the Southern Hemisphere as early as the time of Prince Henry the Navigator in 1418, it was not until January 17, 1773, that the Antarctic Circle was crossed for the first time by explorers from the north. This was the achievement of a British expedition, under the command of Captain James Cook. He sailed from England in 1772 on the "Resolution," a vessel of 462 tons, accompanied by the "Adventure," of 336 tons, under Captain Tobias Furneaux. Cook first searched in vain for Bouvet Island and later, on the date already given, reached a point within the Antarctic Zone at latitude 67 degrees 15 minutes south in longitude 39 degrees 35 minutes east, where further progress was prevented by the dense ice packs. From that point Cook sailed to the north in search of South France, of which he had been told at Cape Horn, but failing to reach this point he again turned to the south, and was able to proceed as far as latitude 61 degrees 62 minutes south in longitude 95 degrees east before his course was again inter-

rupted by impassable ice. He then sailed eastward approximately on the parallel of latitude 60 degrees south, until, on March 16th, he reached longitude 147 degrees east. The severity of the approaching winter then drove him northward to New Zealand and the tropical islands of the Pacific Ocean, where he remained until November, 1773, when he again set sail for the south and crossed the Antarctic Circle for the third time. On this voyage he attained latitude 71 degrees 10 minutes south in longitude 106 degrees 54 minutes west. This point, which he succeeded in reaching on March 30, 1774, was the farthest point south that was gained during the eighteenth century.

Before completing his voyage, however, Cook continued to the east almost to South America, and then returned to Tahiti for further supplies, after which he crossed the South Pacific to Tierra del Fuego, thence past Cape Horn to the Isle of Georgia and Sandwich Land, which he discovered on December 29, 1774, and which was the only ice-clad land he had seen. From that point he crossed the South Atlantic to the Cape of Good Hope, and thereby exploded the myth of a habitable southern continent.

The next important Antarctic expedition on record set forth in February, 1819, when William Smith, in the brig "Williams," while rounding Cape Horn with a wide detour to the south, observed land in latitude 60 degrees 40 minutes south and named it New South Shetland. Smith's ship was afterwards chartered by the British naval commander of the Pacific Station, and in 1820 returned to New South Shetland under the command of Edward Bransfield, Master of the Royal Navy, and proceeded as far south as latitude 64 degrees 30 minutes. In the meantime American sealers from Stonington, Connecticut, were plying their trade on the newly discovered land. One of their number, Nathaniel B. Palmer, discovered the chain of mountains farther south which still bears his name. It was not long after that the Emperor Alexander I of Russia, became interested in the subject of Antarctic exploration and launched an expedition second in importance only to that

of Captain Cook. This expedition, commanded by Fabian von Bellingshausen, aboard the "Vostok," accompanied by Lieutenant Sazareff in the "Mirni," set out with the purpose of supplementing Cook's work by circumnavigating the Antarctic region, keeping as far south as possible in those longitudes where Cook had made detours to the north. Bellingshausen reached South Georgia in December, 1819, discovered the Traverse Islands and after sighting the Sandwich Islands was stopped by ice in latitude 60 degrees south. In order to avoid this ice he turned to the east and crossed the 60th parallel in latitude 8 degrees west and proceeded as far as latitude 69 degrees 25 minutes south in longitude 1 degree 11 minutes west. This record still stands as the extreme latitude reached in that meridian. Later, however, he reached latitude 69 degrees 52 minutes south in longitude 92 degrees 10 minutes west.

On the following day, January 22, 1821, Bellingshausen sighted the first land seen within the Antarctic Circle, which was a small island named for Peter I. The following week he sighted a larger body of land which was named for Alexander I. The most important result of Bellingshausen's explorations was that it left only one half of the Antarctic Circle within which land could possibly project beyond the Frigid Zone.

James Weddell, a retired officer of the British navy, was the next explorer to venture into the Antarctic region, when in 1823 he launched an expedition on board the "Jane," a brig of one hundred and sixty tons, and the "Beaufoy," of sixty-five tons. He succeeded in reaching latitude 74 degrees 15 minutes south in longitude 34 degrees 17 minutes west, which was at that time the highest southern latitude that had been attained. This point was reached entirely by sea, giving no indications of a polar continent.

Weddell brought back with him valuable specimens of Antarctic animals, among which was a specimen of the seal which bears his name. The body of water which he explored, he then named for George IV, but it is now known as Weddell Sea.

Six years later an expedition under the command of Captain

Henry Foster of the British navy was organized for the purpose of making scientific observations in the South Shetland Islands. Although this expedition did not go as far south as the 64th parallel, their careful work in the territory which they covered added greatly to the scientific world's knowledge of Antarctic conditions.

In 1831, John Biscoe, of the British navy, made a voyage in the brig "Tuli," accompanied by the cutter "Lively," which ranks with the expeditions of Cook and Bellingshausen in that Biscoe surpassed their achievements with much inferior facilities for the work. However, Biscoe was not only a keen explorer but a man of great reasoning powers and worked his way to conclusions which were far beyond his time. In January of the year mentioned, when Biscoe had hunted in vain for seals on the Sandwich Islands, he put into execution the idea of sailing eastward in search of new islands on which he might hope to find seals. In latitude 60 degrees he met an impenetrable barrier of ice which compelled him to travel east as far as longitude 10 degrees west before he could again turn south. From this point he reached the Antarctic Circle in longitude 1 degree east. His route of travel approximately paralleled that of Bellingshausen, but farther east than the latter's tracks. Biscoe was unsuccessful in his search for seal-bearing lands, but nevertheless continued eastward for five weeks under great difficulties and discouragements, covering much the same longitudes that Cook and Bellingshausen had covered, but in a greater latitude. His highest latitude was 69 degrees in longitude 10 degrees 43 minutes east.

Continuing eastward for another month, and remaining practically all of the time within the Antarctic Circle, he finally reached longitude 49 degrees 18 minutes east where he finally discovered land. For two weeks in the face of terrible storms Biscoe was tossed about in a vain attempt to land on the promontory which he had sighted, and to which he gave the name of Cape Ann, but finally when the sea began to freeze and his crew seemed utterly exhausted from exposure, Biscoe regretfully withdrew from the fight, without

having succeeded in reaching Cape Ann, which is now known as Enderby Land.

Biscoe returned to Tasmania where he remained only long enough to regain his health and reorganize his crews, and immediately set sail again to hunt seals on the shores of New Zealand and nearby islands. Soon, however, he again turned south, and on February 14, 1832, he sighted land in 60 degrees south, 72 degrees west. This he believed to be the most southerly land yet known, being in ignorance of Bellingshausen's discoveries in the same regions. He also sighted the islands now known as the Biscoe Islands, and beyond this a large tract of land of which he took possession in the name of William IV, now known as Graham Land. For his achievement in Antarctic explorations Biscoe was awarded the gold medals of the Geographical Societies of London and Paris.

The voyage of John Balleny, in command of the "Eliza Scott" and the cutter "Sabrini," who set sail from New Zealand on June 17, 1839, was unique in the fact that it was the first east to west expedition in high latitudes, and obtains its importance from the fact that all expeditions in the opposite direction had suffered severely from terrific head winds. Crossing the Antarctic Circle in 178 degrees east, Balleny proceeded to 69 degrees south, a higher parallel than had before been reached in that section. Here he was stopped by ice. Working his way northwestward along the edge of the ice, Balleny came upon a group of mountainous islands, known as the Balleny Islands, one of which was 12,000 feet in height. Another of these islands was discovered by Balleny to be an active volcano. Attempts to make a landing here were ineffectual and almost led to the drowning of Captain Freeman in the "Sabrini." Balleny then continued westward between 63 degrees and 65 degrees south to 121 degrees east where he discovered land, which was given the name of Sabrini. On this part of the trip an iceberg was passed having a large rock embedded in it, which showed clear evidence of the existence of land farther south.

Not very long afterward the scientific world turned its atten-

tion to the study of magnetic conditions in the Antarctic. Expeditions were sent out for this purpose from the United States, France and Great Britain. All of these expeditions made notable discoveries, among which the achievements of the British expedition are by far the most important. The French expedition under D'Urville, in 1838, was checked by a bank of ice extending for three hundred miles east and west. The American expedition, under Captain Wilkes, in 1840, discovered a long coast line, which apparently extended from Enderby's Land to Ringold's Knoll, being of such extent that he described it as an Antarctic continent. His discovery, long questioned, has since been confirmed.

The British expedition composed two ships, the "Erebus," of 370 tons, and the "Terror," of 340 tons, the former commanded by Captain James Clarke Ross, of the British navy, who was also in command of the expedition, and the "Terror" commanded by Frances Rawdon Moira Crozier. An interesting feature of the personnel of this expedition lies in the fact that Joseph Dalton Hooker, a young surgeon, joined the British navy for the express purpose of accompanying this expedition. He not only gratified his wish but lived to take a keen interest in every subsequent Antarctic expedition, down to that of Captain Scott in 1910-12.

Ross's expedition pushed its way south, and after crossing the Antarctic Circle on January 1, 1841, encountered a heavy ice pack on January 5th in 174 degrees east. Much to their surprise, Ross and his companions were able to work their ships through the ice, from which they entered upon an open sea. Making their course for the magnetic pole, they discovered a chain of very high mountains lying on the coast running south from what is now known as Cape Adair. This body of land was given the name of Victoria Land. Continuing southward along the coast the highest mountain was named Mt. Melbourne in honor of the prime minister. On January 28th the volcanoes Erebus and Terror were sighted in 78 degrees south. At the base of these volcanoes lay Cape Crozier from which the unprecedented ice barrier or cliff ran eastward.

This tremendous ice cliff, which rose perpendicularly to a height of 300 feet, extended for a distance of 250 miles and is still known as the Ross Barrier, while the water which it borders is known as Ross Sea.

Proceeding eastward along the barrier, Ross reached a latitude of 78 degrees 41 minutes. At 167 degrees west, Ross turned in search of a winter harbor in Victoria Land. With the idea of keeping near the south magnetic pole, Ross did not explore McMurdoch Bay, where, as is now known, he could have found a harbor. Being unable to land elsewhere on account of the ice, Ross returned to Hobart, Tasmania, after achieving what still stands as the most remarkable Antarctic voyage for striking discoveries which has ever been made. In November of 1841, Ross returned with the "Erebus" and "Terror" to the fascinating territory which he had been compelled so regretfully to leave a few months previous.

Despite unusually severe storms, Ross succeeded in reaching 78 degrees 10 minutes south and 161 degrees 27 minutes west, the highest latitude that had been reached for sixty years. Here the ice barrier attained a mountainous height, and Ross believed that he had found a new land, but not being able to confirm his belief, it was left until the following century for others to explore this territory, which came to be known as King Edward Land. Again Ross turned northward, wintering in the Falkland Islands, and early in 1843 made his third and last expedition without important discoveries.

With many minor Antarctic expeditions intervening, it was over fifty years before Captain Christenson, the Norwegian explorer, commanding the "Antarctic," succeeded in landing a small party on the mainland near Cape Adair, and thus achieved the distinction of being the first to set foot on the Antarctic continent.

In 1898, Carstens Egeberg Borchgrevink, a young Norwegian residing in Australia, who had accompanied Captain Christenson in 1894, and who afterwards returned to England, organized an expedition which set sail on the "Southern Cross" with the intention

of landing at Cape Adair and advancing toward the south magnetic pole, with the further possibility of a trip to the geographical pole. Cape Adair was reached on February 17, 1898, where a party of ten was landed. Progress inland at that time was found impossible, and Borchgrevink with his men spent the first year ever passed by man on the Antarctic land in meteorological and magnetic observations and in collecting scientific specimens.

The following January the party again boarded the "Southern Cross" and sailed further south, landings being made at several points en route, and also at the base of Mount Terror on February 10th. While the party remained ashore at Mount Terror one of the most exciting incidents of the whole journey occurred. The party landed at a small beach which lay under cliffs towering five hundred feet above. In order to get photographs of it, the boat was despatched back to the ship for a camera, while Borchgrevink and Jensen remained ashore. The boat had not gone very far when a great roar sounded in the air. Those on shore feared for the moment that a slide had begun in the cliffs over their heads; but it was not the rocks that were moving. A mighty glacier, which entered the sea near where they were standing, was shedding an iceberg from the parent mass, and the noise was caused by the rending of the ice as the tremendous mass tore itself free. The beach was barely four feet above the water, and, as the berg crashed into the sea, it sent up a great wave that swept along the coast. The men on the beach barely saw it coming before it had reached them. Pressing themselves against the face of the cliff at the highest point they could reach, they held on for dear life while the icy water surged up and over them. After the first wave had passed, others followed, though these only reached up to their arm-pits, and had it not been for a projecting point of rock, which served to break the force of the waves, there is little doubt but that both would have been swept away. The full force of the waves was shown only a few yards away from where the two had stood, stones being torn loose and the mark of the water being left twenty feet up the cliff.

From Mount Terror Borchgrevink's expedition proceeded along the ice barrier, the edge of which was found to be about thirty miles further south than it had been when discovered by Ross fifty-eight years before. Borchgrevink succeeded in landing on the ice with dogs and sledges and travelled south about sixteen miles to latitude 78 degrees 50 minutes. On this trip he made the important discovery that plant life existed on some of the rocky islands in the form of mosses and lichens.

The territory explored first by Ross and afterwards by Borchgrevink and others, proved to be the pregnable point from which Shackleton, Amundsen and Scott later succeeded in penetrating the Antarctic continent, with the result that the latter two achieved the distinction of reaching the South Pole itself, as already related. It was in this territory also that the Japanese expedition arrived in the Bay of Whales and landed on the barrier on January 16, 1912, near the winter quarters from which Amundsen made his successful trip to the Pole.

The success of the Borchgrevink expedition revived the interest in Antarctic research, and in 1901 three nations, England, Germany and Sweden, despatched expeditions to the far south. Each was to have its distinct field of operation, the British to explore the region south of Australia, the Swedes that south of Cape Horn, and the Germans the Bouvet Island district. This island, first seen by Captain Cook, had been revisited by a German steamer, the "Valdivia," in 1898, and evidence found of extensive land near the Pole.

The German expedition sailed from Kiel on August 11, 1901, on board the "Gauss," and was under the command of Professor Erich von Drygalski. Their objective was Kerguelen Island, and the chief work carried out was of a purely scientific character. It was originally intended that all the expeditions should return to Europe after passing one winter in the Antarctic. The Germans did so, but both the Swedes and the British were unable to carry

out this part of the program, the former in consequence of the loss of their ship in the ice, the latter because their ship was hard and fast in the southern ice. The Germans were more fortunate in escaping the ill effects of what was an unusually severe ice season; but the expeditions of the other nations, by the longer stay they had in the frozen regions, were able to return with a much more comprehensive collection of information.

The principal result achieved by the German expedition was to prove that Knox Land and Kemp Land, which appear as separate coasts on the old maps, are really continuous areas. Forcing a way through the pack ice, the "Gauss" found a stretch of open water, rapidly shoaling, and leading to a rugged, steep coast line, in the position which Ross had charted in 1841 as "ice cliffs." Here the ship became frozen into the ice and winter quarters were established. Little work of importance was done, and in the following summer the explorers freed their ship from the ice and returned to Germany.

The Swedish expedition, sailing in the "Antarctica," commanded by Captain C. A. Larsen, was headed by Professor Otto Nordenskiöld, the plan being to leave a party of six on the Antarctic shores, the ship returning for the winter to the Falkland Islands. The final return was to be in 1903. As it proved, the summer of 1902-3 was the coldest and worst for ice conditions ever recorded in the south polar region, and instead of one winter, the Swedes were compelled to spend two in the ice.

On February 10, 1902, the vessel was in Sydney Herbert Bay, which formed the hitherto unvisited part of Erebus and Terror Gulf. As it was obviously impossible to get farther to the south, Nordenskiöld decided to establish the winter station on one of the islands in this vicinity. A brief visit to Seymour Island did not reveal the wealth of fossil-bearing strata that was expected. Paulet Island was visited and an interesting circular lake was discovered, lying in a circular range of hills. The banks of the lake bore ample evidences that at one time there had been great volcanic activity at

the place, and the lake was evidently formed in the hollow of the extinct crater. The place did not appeal to them as a site for the winter station, and, as further journeys revealed another island on the other side of Seymour Island, where there was a beach which appeared to be sheltered from the southward, the point whence the most violent winds blew, it was decided to build the hut there.

The "Antarctica" anchored in the bay opposite the beach and rapidly unloaded the camp equipment. When everything was almost landed, a movement in the ice at the mouth of the bay compelled the ship to stand out into open water, so the party of six, who were to spend the winter on the island, hastened ashore, where they had their hut to build and all preparations to make without the help, which had been counted upon, of the crew of the vessel. But this did not weigh heavily upon them, and they set to work with a will. In the course of a week, the "Antarctica" was able to get into the bay again and to land the remaining stores; but by that time the hut was up and the adventurous six were almost settled down to their routine work.

A day or so after landing, Nordenskiöld discovered that the island they were on—named by them Snow Hill Island—was peculiarly interesting from a geological point of view, for he found fossils of ammonites, a token of ancient life of the region which alone would have made the expedition memorable.

The position proved to be badly chosen, as it was exposed to gales of great violence, the wind at one time being strong enough to lift a whale-boat, carry it over a second one, and dash it against an ice cliff, twenty-one yards away, with such violence that its side was smashed in. As winter approached, the storms obscured the sky and the sun was not often seen. They were not far enough south to lose it altogether, and all through the winter they had the benefit of its presence, though not for many hours at a time. When it did come, however, it came with great magnificence. After a series of storms they saw it rise one morning, and the spectacle is described as gorgeous and beautiful.



ONE OF SCOTT'S CAMPS ON THE WAY TO THE SOUTH POLE

The South Pole was found on a high plateau in contrast to the North Pole which is surrounded by smooth ice practically at sea level. This view shows the character of much of the region traversed on the way to the Pole.



ROALD AMUNDSEN IN POLAR COSTUME

The discover of the South Pole in his Antarctic traveling clothes. Temperatures of more than forty degrees below zero are sometimes encountered.

The winter passed without misfortune, and with the approach of spring preparations were made for the first long sledge journey. On this, and other journeys, they succeeded in traveling long distances over what was often heavy ice, on two meals a day. The first, which was the more substantial of the two, consisted of pemmican made into a thick porridge-like soup, the nutritious qualities of which were felt even as it was being eaten. This was followed by coffee, meat biscuits, butter and sugar. On such a meal the men existed and traveled all day, making no stop until the evening, when they had their dinner, consisting merely of pea or lentil soup, meat, chocolate, bread, butter, and, sometimes, bacon. Immediately they had eaten this frugal repast they were in their sleeping-bags and asleep.

Meanwhile the "Antarctica" had proceeded north to Tierra del Fuego and South Georgia, picked up some members of the party who had been left there, and sailed south again with the purpose of reaching the winter station early in January. As she advanced, however, she found the sea so blocked with ice that she could not follow the course she had traversed the previous year. When she arrived at Hope Bay, some miles to the north of the station, Professor Andersson and two companions landed with sledges and sufficient provisions to last nine men for two months. It was their intention to proceed over the ice to the station, while the "Antarctica" steamed away to the west, in the hopes of finding an opening through the ice which would enable her to reach the station. If, on the arrival of the relief party at the station, the "Antarctica" had not appeared, they were to return, with the other six, and wait for the ship at Hope Bay.

As it proved, they were not able to traverse the intervening region, and were compelled to stay where they were, and as the summer passed without the ship being seen, they decided to return to Hope Bay and await her. The original party had also looked for the "Antarctica" in vain. The farthest south they penetrated

was to 56 degrees 48 minutes, but they had been fortunate in finding fossil remains of unknown animals, and the fossil leaves of several kinds of pine trees and ferns.

The "Antarctica" was, like her two parties, ice bound. She had steamed away to the west, and then, a chance offering itself, had stood to the south until she was in the latitude of Paulet Island. She turned to the east, heading in the direction of the station on Snow Hill Island, when the ice caught her. For days she remained in the pack, those on board chafing at the delay and trying every device to get her free. But the ice was too strong, and at last they were forced to admit that they were caught for the winter. This was bad enough, but there was worse to follow. A movement began in the pack, and a pressure-ridge started directly for the ship. It was upon them almost before they realized it, and the crash with which she heeled over told its own tale. The ice had torn a length of her keel away, and had made a hole in her which it was impossible to repair.

Everything that could be got out was thrown on to the ice, and the ship's company formed themselves into sledge parties to convey as much as they could to the nearest land. This was Paulet Island, where they arrived after an arduous march and at once set to work to construct a shelter for the winter, which was now upon them. There they stayed, within a few miles of the station, and of the other party at Hope Bay, but all in ignorance of the proximity of one another, and quite unable to communicate.

With the first sign of approaching spring the men at the original station made arrangements to resume their expeditions and complete the survey of the islands in their immediate vicinity. The first trip was in the direction of Hope Bay, and the party had been out some days when, in the dim light, one of them thought he saw a dark patch on the ice in the distance. He drew his companion's attention to it, but neither cared to trust their eyes. As they approached nearer, the dark patch resolved itself into the

figures of men, and a still nearer view revealed two such extraordinary creatures that one of the men from the station thought it would be as well to have a revolver ready in case of emergency. The two figures were in black garments, with black caps on their heads, and their hands and faces were as black as their clothes, while the upper parts of their faces were hidden by curious-looking masks. Beside them was a sledge.

With considerable uncertainty the men from the station approached, and were not reassured when they were asked, in English, how they were. "Thanks; how are you?" they replied. "Don't you know us?" one of the strange-looking creatures asked. "We're the relief party. Have you seen the ship?" Then a third figure appeared from behind an ice hummock where he had been preparing a meal. They were Professor Andersson and his companions, who were on their way, for the second time, to the station.

Without loss of time the reunited comrades made their way to the station, where soap and water and a fresh supply of clothes soon transformed the appearance of the three who had had so trying a time in the little stone hut at Hope Bay. But the situation was still fraught with anxiety, now that they realized that something very serious had happened to the "Antarctica." It was impossible for them to determine whether she had gone to the bottom, or had been beset in the ice. Only one thing was clear, and that was that they would all have to stay where they were until some help came to them. While they were still debating what chances there were of any coming before another winter went by, they were startled, one day, by the arrival of visitors. These proved to be a search party from the Argentine cruiser "Uruguay," which the Argentine government had despatched on account of the "Antarctica," not having returned at her appointed time. Help had come at a time and from a quarter least expected.

But the news that the cruiser brought added very much to the fears the explorers entertained as to the safety of the "Antarctica"

and her crew. If she had been beset, some of her company could have reached the station over the ice while it was still compact, or, if she was still afloat, she ought herself to have been able to reach them. The absence of all news made the members of the expedition gathered at the station more than uneasy as to the fate of their comrades.

The morning after the Argentine officers arrived, one of the men, looking out of the hut, exclaimed that eight men were coming over the ice. Under the impression that they were some of the cruiser's crew sent to assist in removing the baggage from the station to the ship, he went out to meet them, walking slowly, as he tried to decide what was to be done if they could not speak any language he knew. The others in the hut, watching him, saw him suddenly leap forward and then turn to them and wave his arms. "Larsen! Larsen is here!" they heard him shout.

With one accord they rushed out after him, and in a few moments were eagerly shaking hands with the eight men, who were a detachment sent out from the camp on Paulet Island to ascertain whether the party at the station was still intact or whether it had been rescued. The news was sent to the cruiser, and soon all the members of the expedition and their baggage were on board and the ship was steaming for Paulet Island.

On arrival off the coast no signs of the remainder of the crew of the "Antarctica" were to be seen, so the whistle was blown. The men at the time were all in the shelter, sleeping, and the sudden sound of the whistle roused them. For the moment they could not believe their ears. Then one of them looked out and saw the ship, and the shout with which he and his companions greeted the sight rang far out over the water.

Professor Andersson and his two comrades had left the "Antarctica" on December 29, 1902; the ship was nipped on January 10, 1903; and the castaways arrived at Paulet Island at the end of February. They had lived in the shelter they constructed, subsist-

ing mostly on penguin, until November, when the Argentine cruiser arrived. Only one man had died.

The expedition reached Buenos Aires on November 30, 1903, having, during the time they had been in the Antarctic, collected a mass of interesting and valuable scientific information.

On December 2, 1911, Professor Douglas Mawson, a lecturer in geology at the University of Adelaide, sailed from Hobart, Tasmania, in the "Aurora," for the purpose of exploring the vast coast line of the Antarctic which was discovered by the American Captain Wilkes seventy years before and named after him. The shores of Wilkes Land had not been reached since save by the Gauss expedition of 1902 and 1903, and it reported indications of a great continent lying inland. Dr. Mawson planned to make a survey of this 2,000-mile coast line and penetrate as far as possible into the interior. He thus hoped to cap the work of the American expedition under Wilkes on the Indian Ocean side of the southern continent.

In the messages received during the progress of the expedition Dr. Mawson reported finding Termination Land and discovering several islands. He described the southern magnetic pole as a force centre moving within a circular area of variable diameter, and noted that within sixty-nine years it had travelled two hundred and forty miles.

A wireless message received at Sydney from Adelie Land on February 25, 1913, told of the deaths of Lieutenant B. E. S. Ninnis of England, and Dr. Xavier Mertz of Switzerland, members of Dr. Mawson's expedition.

Lieutenant Ninnis of the Royal Fusiliers Regiment was killed by falling into a crevasse. The message did not tell the cause of Dr. Mertz's death.

The message was received by Professor Davis of Sydney, who was with Sir Ernest Shackleton on his expedition. Dr. Mawson and the six members of his party were well, according to the despatch, and in good condition to winter on the island of Adelie.

The wireless message said:

"Dr. Douglas Mawson and several of his men missed the 'Aurora,' which had gone under the command of Captain J. K. Davis to bring them home. Their missing the ship was due to unfortunate circumstances. Lieutenant B. E. S. Ninnis of the City of London Regiment of Royal Fusiliers, and Dr. Mertz, who was the ski champion of Switzerland in 1908, members of the expedition, are both dead. The others are well.

"Dr. Douglas Mawson and six other members of his party probably will winter in Adelie Land. Some very successful sledging expeditions were made during the sojourn of Dr. Mawson and his companions in the Antarctic."

In a report from Dr. Mawson to Lord Denman, Governor-General of Australia, which was received simultaneously with the news of the death of Lieutenant Ninnis and Dr. Mertz, the commander of the expedition gave the following account of the results obtained so far by his expedition:

"Our sledging season has been very successful. We have opened up a large area of new land, both east and west of Commonwealth Bay. We have obtained important new data from numbers of stations in close proximity to the magnetic pole.

"It is probable that six of the staff of the expedition, as well as myself, may unavoidably be detained for another year in the Antarctic."

CHAPTER VII

The Story of Peary's Great Exploit

THE sixth of September, 1909, was a great day in the history of polar exploration. It was, in fact, the consummation of many years of effort, involving the expenditure of immense sums of money, the endurance of untold physical suffering and mental anxiety and the loss of hundreds of human lives.

This date stands out in history because it marks the world's receipt of the following astounding dispatch from Indian Harbor, Labrador, via Cape Bay, Newfoundland, which came close on the heels of Dr. Cook's claim to the discovery of the North Pole:

"STARS AND STRIPES NAILED TO THE NORTH POLE.

"PEARY."

What did it mean? Could it be correct? Was this fanciful way of expressing a great fact the one that would be chosen by a dignified naval officer like Robert E. Peary? Such were the questions that many asked. It was far from certain that this was not a hoax, the outcome of the sense of humor of some fantastic individual at Indian Harbor.

Men waited in suspense—hope mingled with doubt. They had not long to wait. An hour later a second message was received by Herbert L. Bridgman, Secretary of the Arctic Club of America. It was to the following effect:

"Pole reached. 'Roosevelt' safe.

"PEARY."

These startling and laconic messages, flashed from the coast of

Labrador to New York and thence to the four corners of the globe at the moment when Dr. Frederick A. Cook was being acclaimed by the crowned heads of Europe and by the world at large as the discoverer of the North Pole, added a remarkable chapter to the narrative of a grand achievement.

Bridgman's comment on the message settled the question of its source in the mind of the multitude. On seeing the text of the message, he exclaimed:

"That settles it without a doubt. Peary has reached the North Pole. He and I fixed upon a secret code in which he was to convey to me his success or failure. Translation of the code words in his dispatch means that he has at last achieved his greatest ambition.

"There were a lot of words in the code. Several began with the word 'sun,' and these were to indicate that he had been successful in his quest of the Pole.

"I have left my list of code words at Northampton, but I think that the word 'sunshine' was the code word we agreed upon for 'Pole reached. Roosevelt safe.' There were several words beginning with 'moon,' which were to signify that Commander Peary had not reached the Pole."

A second message to Mr. Bridgman read:

"Kindly rush following: Wire all principal home and foreign geographical societies of all nations, including Japan, Brazil, etc., that the North Pole was reached April 6th by Peary Arctic Club's expedition, under Commander Peary. PEARY."

This was but the beginning of despatches from the returning explorer. Soon they began fairly to rain down the wire. To Henry F. Osborne, of the American Museum of Natural History, came the following:

"The Pole is ours. Am bringing large amount of material for museum. PEARY."

Before the explorer left on his trip a year ago he had assured Mr. Osborn that if he reached the Pole he would come back with a sack full of curios that would probably make some interesting exhibits. Mr. Osborn cabled his thanks to Peary upon receiving the message, and despatches came to Peary from other sources, conveying the congratulations of foreign and American geographical societies and former polar explorers on the accomplishment of the great feat, including one from the International Polar Commission, signed by Cagni, Nordenskiöld and Lecointe, officials of the commission.

Going back a little, let us tell from its beginning the story of the final expedition of the persistent explorer, the claim of whose success followed so quickly that of Dr. Cook. When Commander Peary planned the trip with which we are here concerned he announced that he would remain in the ice until the Pole had been reached, even if it took the three years for which his ship was provisioned, to succeed. His experience on his former trips was such that he now felt sure of accomplishing the design to which so many years of his life had been devoted. With this in mind, he set out to raise the money necessary to equip the expedition.

He needed \$50,000, and this he had considerable difficulty in obtaining. He put in all the money he had himself, and relied upon popular subscription and his friends to furnish the remainder. Zenas Crane, of Dalton, Mass., gave \$10,000, and others contributed liberally. Even when he lacked half of the necessary amount Peary went ahead characteristically to get his ship in order, feeling sure that the money would come. It came, and when it did the explorer was all ready to weigh anchor and proceed north.

The ship, the "Roosevelt," which the Peary Arctic Club built for the explorer for his journey north in 1905, was completely overhauled. New engines and boilers were installed and many changes, suggested by the explorer's previous experience, carried out. The "Roosevelt" was first launched in Bucksport, Me., on March 23,

1905. The designer was William E. Winant, of New York, who worked from Peary's own suggestions. She is 182 feet in length, with a beam of 35.5 feet, a depth of 16.3 feet, and a mean draught, with stores, of 17 feet. Her gross tonnage is 614 and her estimated displacement about 1,500 tons. She is a three-masted fore-and-aft schooner-rigged steamship. She was built entirely of white oak, with treble frames close together, double planked. Her walls are from 24 to 30 inches thick. The keel, 16 inches thick, is reinforced with false keels and keelson. Her heavy bow is backed by twelve feet of solid deadwood. Her stern, reinforced by iron, had a long overhang, to protect the rudder from the ice, but the rudder itself was so arranged that it could be lifted out of the water when jammed or entangled.

It had been Peary's purpose to set out in 1907, but the ship could not be got ready in time, so that it became necessary to defer the trip till 1908. This failure in his plans prevented the possibility of a very interesting event, which might have taken place if he had got off at the time originally intended. In that case his dash to the Pole would probably have been made in 1908, and the strange contingency might have happened of the two rival explorers, Cook and Peary, meeting at the end of the earth's axis. In such a possible case what else would have occurred? Would the bad blood which has since developed have manifested itself there, and the Pole have been the scene of a royal battle for its possession? Or would the rivals have consented to bury the hatchet with their records and drag back the coveted prize in friendly union? No one can say; but in such event, in any case, the present unhappy controversy could not have arisen.

At any rate, this interesting possibility was prevented by Peary's year's delay, it being on July 6, 1908, that the "Roosevelt," with a picked crew and thoroughly stocked for a three years' stay in the North, set sail from New York. The scientists on board were the following: Dr. John W. Goodsell, of New Kensington, Pa.; Pro-

fessor Donald B. McMillan, of Worcester, Mass.; Professor George Borup, of Yale University; Professor Ross G. Marvin, of Yale University; Dr. John Scott, surgeon.

The scientific equipment which Commander Peary took with him on his voyage was said at the time to be the most complete ever taken to the polar regions. It consisted of all the instruments needed in meteorological, astronomical and tidal observations.

Forty guests of the Peary Arctic Club escorted the ship as far as City Island, and it then proceeded to Oyster Bay, where Mr. Peary had arranged to have President Roosevelt inspect the boat. Just before leaving Commander Peary discussed his journey with the newspaper men.

"I'll not promise anything before I start," he said, "except that I am going to put into it every bit of energy, moral, mental and physical, that I possess. I feel confident that in any case I shall carry the American flag further north than ever. Unless the unforeseen happens I shall plant the Stars and Stripes at the Pole. If conditions are no worse in the next season than they were during the last voyage I shall hope to accomplish the object of the expedition and return in about fifteen months—that is in October, 1909. I am prepared, however, for a stay of three years.

"The attainment of the North and South Poles by American expeditions would be worth to this country many times the few thousands expended just for the closer bond, the deeper patriotism resulting when every one of the hundred millions of us could say, 'The Stars and Stripes float at both ends of the earth's axis and the whole earth turns about them.'"

All the way to Oyster Bay the vessel got an ovation, and when it reached there President Roosevelt, his wife and family went on board and inspected it.

"Well, Peary, good-bye, and may you have the best of luck," said President Roosevelt as he gave the explorer's hand a hearty grasp.

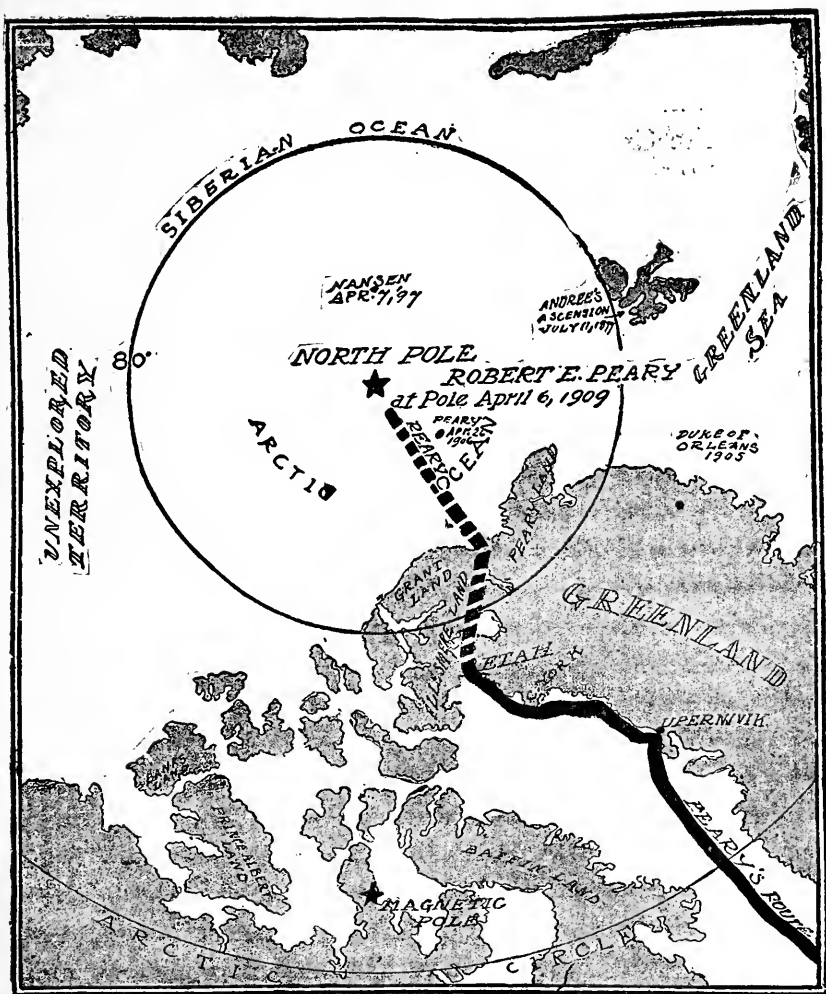
"Thank you," responded Peary with a smile, "I never felt so confident of success in all these years as I do now."

The President expressed himself as being heartily pleased with everything and everybody about the ship, and shook hands with all the crew. Captain Bartlett, shaking hands with the President and bidding him farewell, said, "It's ninety or nothing; the North Pole or bust this time."

It is not necessary to describe the trip north other than to state that the "Erik," the convoy of the "Roosevelt," was injured by striking an iceberg when off Etah, which place the "Roosevelt" left on August 18th, with excellent prospects of making her way farther north. The "Erik" was repaired and set out on her return voyage.

On October 9th last Henry Johnson, an able seaman of the "Roosevelt," arrived in New York from Greenland, bringing the first oral news of the expedition. He returned because of an injury to his knee. He brought a letter from Peary to the Arctic Club, telling of the progress the ship had made, with photographs and other data. Johnson stated that the "Roosevelt" was hit by a hurricane off the coast of Greenland on July 29th. It opened the seams of the ship's bow to such an extent that several of the crew felt her to be practically unseaworthy for a rough voyage among icebergs. While she was being repaired at Etah, Johnson said, her leaky bow caused apprehension among some of the crew. When the "Erik" reached St. John's, however, her commander reported that she had left the "Roosevelt" in good shape.

At Etah, the northernmost Eskimo settlement, Peary obtained the necessary aid from these people, and before the "Roosevelt" steamed out of that harbor it had taken on board forty-nine Eskimos, men, women and children, 226 dogs and the meat of more than forty walrus. The trip north proceeded with comparative ease, with the ordinary obstructions from fog and broken ice, and Robeson Channel was navigated as far as Lady Franklin Bay without meeting either of these.



MAP SHOWING PEARY'S ROUTE TO THE NORTH POLE

Farther north trouble began, heavy ice being met, the "Roosevelt" being driven ashore twice by the ice and somewhat injured. On September 2d they succeeded in getting past Cape Union, at which these troubles had occurred, and northward until Cape Sheridan was reached on the 5th. They were now through Robeson Channel and in the Polar Sea, at the northeast extremity of Grant Land, opposite Greenland, which here trends off to the east, while Grant Land trends to the west. Here the ship was put into winter quarters, at a point close to the position at which it had wintered three years before, and which was reached on the same day as on that occasion.

It had been Commander Peary's desire to winter at some point much farther west, to avoid the difficulties which had formerly imperilled his expedition. On that occasion he was greatly impeded by the rapid drift of the ice to the east, which a little retarded his progress north, and, worse still, carried him so far to the east on his return that he had to make his landing on the coast of North Greenland, many days' march from the "Roosevelt," his base of supplies, and put him in imminent danger of starvation. As it happened, however, the ice conditions obliged him to put the "Roosevelt" into nearly her old quarters of three years before.

Cape Columbia, a point on the northern coast of Grant Land at a considerable distance westward from Cape Sheridan, was now selected as the starting point of the northward trip, and after the work of landing stores and erecting a house and workshop had been completed, sledging trips westward were inaugurated for the purpose of conveying supplies to the chosen starting point. This continued from September 17th to November 5th, by which time a large store of supplies was collected at Cape Columbia, ready for the northward journey in the coming spring. Hunting parties were also kept busy and much game was brought in. Meanwhile the ice lifted the "Roosevelt," listing her eight or ten degrees to port, and all winter she remained with her decks at a considerable slant.

The long winter months were broken somewhat by excursions for hunting and other purposes, and were not without their alleviations in the way of home pleasures. Christmas was especially celebrated and in a style all its own. Captain Bartlett thus tells us what they had for dinner :

"Well, we began with soup, oxtail soup, musk oxtail soup. Then we had a saddle of Cape Sheridan musk ox; beats planked steak all hollow. We wound up with Washington pudding, Washington pie, plum pudding, fruit, raisins and nuts."

Every man on the ship received a box of candy from Mrs. Peary, and there were Christmas boxes for every one. Captain "Bob" had a box which had been entrusted to the commander, while the commander's box had been in care of the skipper. Neither knew of the other's trust, proposed by a loving wife. Toddy, in not too liberal measure, tobacco or cigars, was there for every one.

After the feasting came the races, which had been arranged by Professor McMillan. There were races for men, women and children. There were races for women with children strapped to their backs, races for boys and girls and a tug of war. The course was laid on ice and lighted by lanterns, for the time was the middle of the Arctic night. The temperature was 20 degrees below zero.

Karkelleah, "Jimmy" in the vernacular, won the boys' race, Sigloo was first at the finish for men Eskimos, while Marvin won the 100-yard dash for the whites.

Lacumah, a sturdy married bride, with her first born upon her back, proved speediest in the married women class, and won first prize. This was a cake of scented soap. She had the choice of a kit containing thread, scissors and thimble and a frosted cake. To the surprise of all she chose the soap.

The final work of conveying supplies to Cape Columbia began on February 17th and continued until the 22d, and by the 27th everything was in order for the dash to the Pole, the stores all at hand, the sledges in best order, and the dogs in prime fitness for hard work, well fed and their harness in excellent shape.

Despite Peary's wish to start much farther west than on his former excursion, he seems to have been obliged to accept nearly the same starting point as before. But he may have overcome this by heading northwestward over the sea-ice until a considerably more westward longitude was reached before heading due north. The party which left the "Roosevelt" for the final journey consisted of seven white men, over fifty Eskimos, twenty-three sledges and one hundred and forty dogs.

The end of February arrived and the time for the final great dash was at hand. What might lie before them no one could tell. There might be wide leads, or stretches of open water, such as were encountered in former polar journeys, and long lines of ridged and jagged ice were sure to be encountered, which it would be necessary to climb over or cut pathways through. It was all a problem, as is always the case in Arctic travel. Fortunately for the explorers, on this occasion the ice conditions proved unusually favorable and remarkably rapid progress was made.

The plan adopted was to send forward successive detachments, following each other at fixed intervals, and each turning back after a certain northing was reached, Peary's own detachment being left for the final dash to the Pole. This plan was adhered to throughout, Bartlett taking the lead with the pioneer party on February 27th and the others following in due succession.

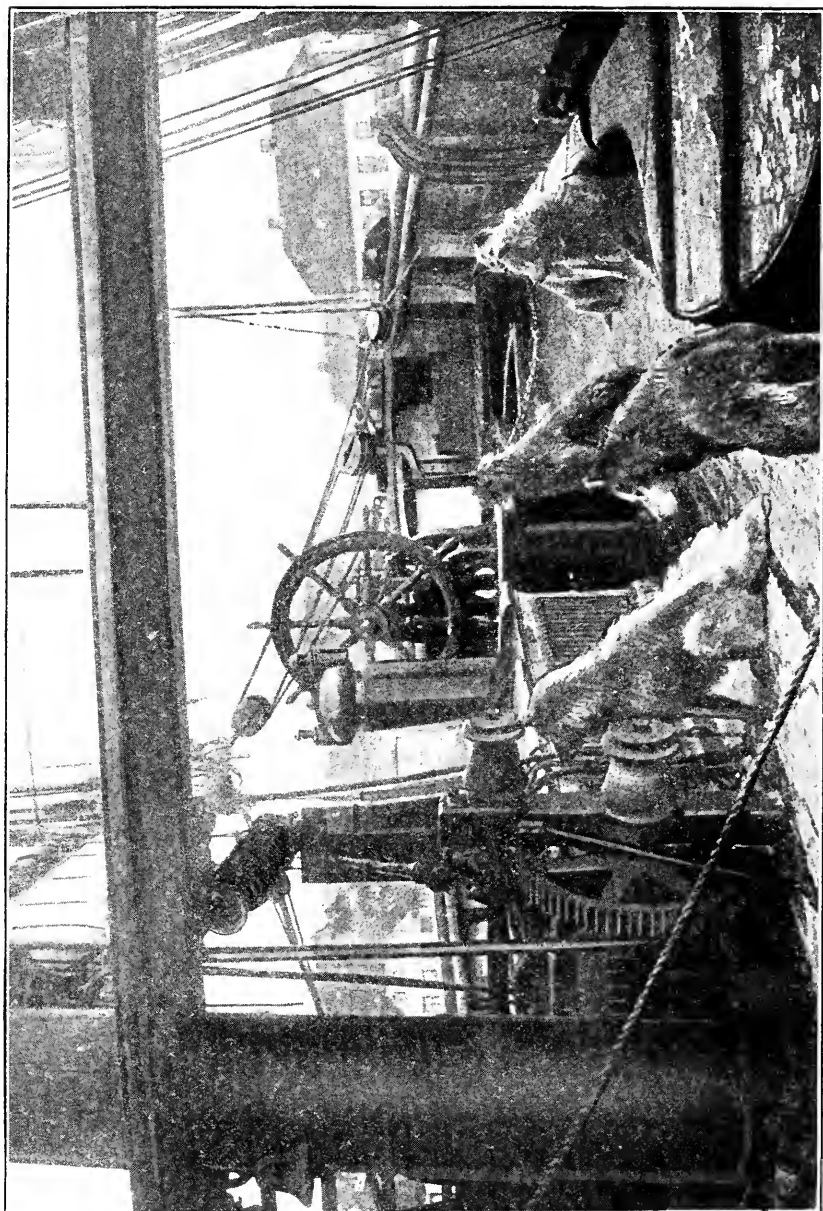
The dreaded troubles soon developed, several sledges being ruined by the rough ice in the first march, while open water soon added its quota to the difficulties. The worst of the open water leads was encountered on March 4th, this being almost a lake of dark, threatening water stretching far to east and west and holding the travelers unwilling captives for a full week. During this week the sun lifted its round, red face above the horizon, to the joy of the explorers, this being the first time they had seen it for more than five months.

During the weary waiting at the lead there was anxiety con-



THE CREW OF THE "FRAM" WAVING TO A PASSING SHIP

These men composed the crew of Amundsen's ship, the "Fram," in which he began the memorable voyage which resulted in the discovery of the South Pole on December 14, 1911.



AMUNDSEN'S DOGS ON BOARD THE "FRAM"

As there are no Eskimo dogs in the South on which explorers can draw, it was necessary for Amundsen to take them along in his ship.

cerning the whereabouts of Marvin and Borup, who failed to come up at the expected time and who had with them the supply of alcohol and oil, indispensable in polar travel. It was three days after the lead was crossed before the missing men reached the camp, they having been delayed by misadventures. Their arrival with the oil and alcohol was, as may be imagined, warmly welcomed.

On March 14th Dr. Goodsell turned back, in accordance with the original plan, and McMillan, whose foot was badly frost-bitten, was sent back the next day. Thus it went on, day after day, the difficulties of traveling growing less as the distance to the Pole decreased. Borup was the second to turn back with a supporting party, leaving at latitude 85 degrees 23 minutes, while Marvin followed him on the backward track at 86 degrees 38 minutes, and Bartlett at the eighty-eighth parallel, two degrees from the Pole and higher north than man had ever before been. In each case the supporting party reinforced the supply of those still going forward.

Shortly before Bartlett's departure the explorers passed through the one great danger of their journey, the ice suddenly opening so near their sleeping place as to put them in great peril, while two of their dog teams narrowly escaped being dragged into the water or crushed by grinding ice blocks. Rushing hastily from their igloos, the dogs were hitched to the sledges and their effects drawn at all speed to a safer place. All night and the next day the groaning ice continued to open and close, then the danger passed, all became fair sailing again, and the forward march was resumed.

After Bartlett's departure about one hundred and forty miles remained to be covered. Peary remained the only white man in the party. With him was his negro servant Henson and four of the Eskimos, the pick of the party, while the dogs taken with him were the best of the pack and the sledges all in good condition and well laden with all things needed. From this time forward all went well, the progress being great, as much as twenty-five miles in a day being covered. It was twilight all the way, the sun appearing above the horizon for only a short time each day.

As he neared the Pole, Peary declares, the going got better and better and the temperature rose. This is not surprising, for temperature, as one goes farther north, often rises considerably for a time and conditions are less severe on the body. This, however, cannot be depended upon, for without warning the thermometer will shoot downward again.

The Pole was finally attained on April 6th, and Peary's exultant words about his arrival at that goal make one's blood tingle as he reads them. He must have acted like a school boy in his delight. In his journal he wrote exultantly: "The Pole at last! The prize of three centuries, my dream and goal for thirty years; mine at last! I cannot bring myself to realize it." His movements after reaching the Pole, in going ten miles back of his camp and eight miles to the right of it, making observations all the time, were advisable and show his determination not to make any mistake about his discovery. It isn't likely that he could be certain that he stood on the exact center of the earth's axis, but by going off at various angles and using his sextant, he could come very near locating it.

What enjoyment it must have been for him to take photographs, as he says he did, at the earth's summit! For thirty hours, he states, he took observations, planted flags and studied the horizon. On the afternoon of the following day he set out on the return trip to Cape Columbia.

Matt Henson, who, as stated, formed one of the party, gives his story of the triumph in the following words:

"We arrived at the Pole just before noon on April 6th, the party consisting of the Commander, myself, four Eskimos, and thirty-six dogs, divided into two detachments equal in number and headed respectively by Commander Peary and myself. We had left the last supporting party at 87 degrees 53 minutes, where we separated from Captain Bartlett, who was photographed by the Commander. Captain Bartlett regretted that he did not have a British flag to erect on the ice at this spot, so that the photograph might

show this as the farthest north to which the banner of England had been advanced. I kept a personal diary during this historic dash across the ice field.

"Our first task on reaching the Pole was to build two igloos, as the weather was hazy and prevented taking accurate observations to confirm the distance traveled from Cape Columbia. Having completed the snow-houses we had dinner, which included tea made on our alcohol stove, and then retired to rest, thus sleeping one night at the North Pole.

"The Arctic sun was shining when I awoke and found the Commander already up. There was only wind enough to blow out the small flags. The ensigns were hoisted toward noon from tent poles and tied with fish lines.

"We had figured out the distance pretty closely and did not go beyond the Pole. The flags were up about midday April 7th and were not moved until late that evening. The haze had cleared away early, but we wanted some hours to take observations. We made three close together.

"When we first raised the American flag its position was behind the igloos which, according to our initial observations, was the position of the Pole, but on taking subsequent observations the Stars and Stripes were moved and placed 150 yards west of the first position, the difference in the observations being due perhaps to the moving ice.

"When the flag was placed Commander Peary exclaimed in English:

" 'We will plant the Stars and Stripes at the North Pole.' "

"In the native language, which I thoroughly understood, I proposed three cheers, which were given in the Eskimos' own tongue. Commander Peary shook hands all around, and we had a more liberal dinner than usual, each man eating as much as he pleased.

"The Eskimos danced about and showed great pleasure that the

Pole at last was reached. For years the Eskimos had been trying to reach that spot, but it was always with them 'tiquelgh,' which, translated, means, 'get so far and no closer.' They exclaimed in a chorus, 'Ting neigh tim ah ketisher,' meaning, 'We have got there at last.' "

The flags raised at the Pole, as stated by Commander Peary, were the following: The first flag to be thrown to the breeze was a silken American emblem presented to him by his wife fifteen years ago. He had carried this flag on every one of his expeditions to the North, leaving a piece of it at the highest point he attained. The last remnants were raised and left at the Pole.

He then raised the navy ensign, the flag of the Navy League, then the flag of the Delta Kappa Epsilon Fraternity, and finally a flag of peace. Tent poles and snow lances were used as flagstuffs, and when all had been raised the Commander took a number of photographs of the group.

After this ceremony Peary inclosed records of his trip and other documents and personal papers in a box, and buried this in the ice. The documents were placed in watertight coverings, and the box itself was watertight, so that it would float if the shifting or melting ice brought it to water. Of the solar eclipse which took place while he was at the Pole and which was visible from that point, he failed to get a good view, on account of clouds, the sun being much obscured.

This accomplished, the successful explorers set out on their southward route. At the start of the homeward journey Peary told his men that the marches were to be longer and sleep less. No time was to be lost in making needless observations, and the thing to do was to get back to Cape Columbia, away from their perilous position on treacherous ice. Back near the eighty-seventh parallel, he says, was a stretch, fifty miles wide, that made him very uneasy, for a prolonged easterly or westerly gale would make it an open sea.

It was just after leaving the Pole that he made his last sounding

of the ocean depth. Five miles from the Pole he came across a deep crack in the ice and by chopping away part of the new surface ice that had recently formed, he was able to let down his lead and wire. For 1,500 fathoms it went down, and when the line was exhausted, with no bottom having been reached, he started to pull it up again. In doing this, the wire caught and was broken and the apparatus sank and was lost.

Three marches brought Peary to the igloos where Captain Bartlett had turned back. The last of the three was accomplished with a northerly gale blowing snow and ice in their faces. Nobody knows, who has not been there, what it means to travel under such conditions, with the temperature away below zero. It seems that one's blood would freeze solid.

Mile after mile Peary hurried toward Cape Columbia, more than four hundred miles away. Good fortune met him at every step, and, though he frequently encountered open leads, the new ice was sufficient to support his sledges. The face of the landscape had been much changed, however, since he passed over it before. Many of the igloos built by his supporting parties had vanished. This was probably due to the shifting ice-floes. The return, in fact, was made with remarkable ease and speed, the rate of progress being almost doubled. The old trail was visible throughout and they went back on their outward track, undisturbed by any eastward drift and heading straight for their starting point.

It must have been a joyful moment when, on April 23d, the tired Eskimos came in sight of Cape Columbia and danced about on the ice as though crazy with delight. In spite of their primitive intellects, Eskimos can speak forcibly and appropriately at times.

One cannot blame Peary and his men, after their reunion with the comrades who had parted from them at intervals on the trip, for spending the two days following their arrival at the cape in sleep. The reaction of both mind and muscle must have been overpowering.

It is interesting to note that he attributes his success in great

measure to a new type of sledge, which, he says, reduced the work of both dog and driver, and a new type of camp cooler, which added to the comfort and sleep of the men. His account of the southward journey of the "Roosevelt" from Cape Sheridan is interesting, but many explorers have accomplished that trip, so there is no need to give any details of the homeward voyage, of which the world became apprised on September 6th, when the messages came speeding downward from Indian Harbor, Labrador, conveying the news of Commander Peary's signal success.

With all these tales of good fortune, there is one of ill fortune to relate, that of the unfortunate death of a prominent member of the expedition, Ross Marvin, who was drowned on his return journey. It is thus described in an extract from Dr. Goodsell's diary:

"Ross Marvin is gone, the Polar Sea has claimed him. The 'Roosevelt's' flag is flying at half-mast. Our hearts are sorrowful for the loss of a dear comrade. I had retired last evening and had not fallen asleep when I heard the cry 'The comatees (sledges) are coming.' Marvin was overdue several days and we were expecting him. Borup came to the door and said, 'Marvin is gone; he went through the ice.' Two Innuits (Eskimos) had started back with Marvin.

"Koodlooktoh related how Marvin had gone ahead in the morning with the comatees. Ross came to the big lead and attempted to cross. The thin ice gave way with him. The broken surface showed that he had made a gallant struggle to penetrate the thin ice to a firmer ice a few yards beyond.

"The icy water and the colder air together in a few minutes must have benumbed his hands and rendered all efforts unavailing. The Eskimos arrived too late. They observed the footsteps terminating at the edge of the broken lead, the back of a koolatah (Innuït jacket) showing above the surface of the water. The following

morning the body disappeared. As is the Innuits' custom, a bag containing Marvin's clothing was left at the edge of the ice."

"Alas! poor Marvin!" was Peary's answer when questioned about him. He went on to say:

"All of my parties are composed of one leader, and four or five Eskimos. The leader has breakfast, then goes on ahead, leaving the Eskimos to pack and break camp. This is what Marvin did. He was several miles ahead of his sledges, when he came to a lead covered with young ice. Either he did not examine it carefully or was incautious, for when his Eskimos came up they found a great hole in the ice, in the center of which they saw Marvin supported by the air in the back of his kapeth, or blue fox coat. He had made a brave fight for his life. He had broken a big circle of ice, but the frigid cold soon chilled him, and his was one more life paid in tribute to the search for the Pole."

When the Eskimos discovered him in the water they placed all of his clothing behind the pool and then made haste back to the ship, where they reported his death to McMillan and Borup. They made all haste to the scene of the tragedy, but on their arrival the body had disappeared, nor was it discovered.

In answer to questions of newspaper correspondents concerning his trip, Peary gave the following information:

"What was it that specially favored you on this trip?" asked one.

"It was the wind principally, or rather the absence of it," Peary answered. "With no wind one is able to follow up the trail on the way back, and can return in half the time that it takes to go. Wind will shift the trail or fault it, as we say. This makes it necessary to break a new trail or lose time hunting for the old one. Without wind there is no waste of time on the return trip. The dogs and men feel better and the way is easy. They know they are going home, and they will go two miles with the Pole at the back to one while facing it. I make it a rule to travel north until two-thirds of

my supplies are exhausted, knowing that I can return to my base of supplies in half the time."

"To what do you attribute your success?" was the next question. "Was it luck in having better conditions or was it that you were better equipped for the work?"

Commander Peary replied: "I expected that question. "It was a combination of both. The absence of strong, continued winds at right angles to my line of march helped me greatly. That was what always bothered me in former expeditions. Headwinds or winds from the south don't bother me a bit. Of course, the wind in your face makes bad sledging, but the cross-winds cause the ice to drift east or west and throw you out of your calculation. This time we had the wind dead ahead. That pressed the ice against the land which we had left and made good footing."

"How about your equipment?"

"It was far superior to what I have had in former expeditions," answered the explorer. "The sledges were of a new type, with special features which made the work easier."

"What were their special features?" he was asked.

"They were improvements similar to those which a yacht builder would develop in a yacht, after he had been building racing craft for ten years. The strain on the dogs was reduced, the sledges were stronger, less liable to breakage, and went over the ice with twenty to thirty per cent less resistance.

"You must understand that there is no riding in sledges when you go to hunting the Pole. If the man with the sledge is able to walk beside it, without any further work than the driving of the dogs, he considers himself lucky. The man with the sledge must bend over the handles, guiding it away from the rough places, lifting it by main strength over them sometimes, reducing the strain on the dogs or sledge wherever possible. He must have muscles of steel. He must be tireless. He must have a wind that does not give out. The nearest thing that I can think of to sledge driving is breaking up virgin soil behind a plow drawn by horses or oxen."

"What training is necessary for the work?" somebody asked the Commander.

"One can train for Arctic exploration as one would train for a prize fight," was the reply. "The training consists of good habits, with sound, healthy body as a basis to work on. One must be sound of wind and limb, to use the horseman's phrase, and he must not be a quitter. That's the kind of training that finds the Pole."

Reverting to the program which he had followed, Commander Peary said:

"After leaving the ship, every five or six marches, depending on the distance covered, a supporting party would be turned back, the best Eskimos and sledges continuing forward with the strongest men. In going up each man has a loaded sledge, while the returning men have one sledge, the other three being broken up to repair the broken sledges or the ones that are discarded. This was done at the end of the seventh, twelfth, seventeenth, and twenty-second marches, a march, going up, consisting of twelve to sixteen hours, and returning eight to twelve hours.

"On the final dash from 87.57 degrees north latitude to 90 degrees. It took five men, five sledges, and forty dogs. The five sledges were the pick of twenty-five which had started from the ship, and these five had been practically rebuilt. We had the forty best dogs and the four best Eskimos, three of whom had been on previous expeditions with me. They knew the ropes; they knew how to handle the sledges, how to overcome open leads.

"Did the Eskimos express any emotion on reaching the Pole?" Commander Peary was asked.

"Not at that time," he replied, "but when we got back to the ice fringe of the Cape Columbia, when they knew there was no more leads to cross, no more broken ice to be fought, you would have thought they had all gone crazy."

"Well, how did you feel, Commander?" asked one interviewer. Commander Peary rose from his seat. He drew himself up to his

full height. His voice was steady and solemn as he turned and faced the questioner.

"Can't you imagine how a man feels after spending twenty-three years of the best years of his life, who had given parts of his body, the body God gave him, in accomplishing his ambition, when he attains it?"

CHAPTER VIII

Side-Lights on the Peary Expedition

WHILE Commander Peary was winning the great prize of his life, some of his companions were having their share of experiences and adventures, and some of these, as told by the parties concerned, were so full of spice and vital spirit that they will serve as illuminating side-lights upon Peary's own story. Especially bright and boyish is that given by young George Borup, a Yale professor and athlete, the photographer of the expedition. It is given in a letter written to his father and given by him to the press. Good wine needs no bush, and the young fellow's graphic account of his adventures may speak for itself.

"DEAR DAD: Gee whiz! I've had a wonderful trip, and wish in many ways we had been stuck up here for another year. The Commander has been just great to me from start to finish. He is kindness and consideration personified, and we fellows would do anything for him. After we got to Cape Sheridan last fall, as soon as the ice got strong enough to hold, the fall sledging of supplies began. I was out in the field for about a month, sledging about five hundred miles, but after one two-week trip came in with two heels, two big toes, and ball of one foot frost-bitten, which was damnably annoying, as it laid me up a month. Cause, inexperience. Was all right by the December moon, when I sledged some two hundred and twenty-five miles in ten days, taking provisions toward Cape Columbia. In the January moon I went with four Eskimos to a large glacier about one hundred miles from us, in the interior of the country. We went after deer, but didn't get any. However, hares

were so thick you'd fall over them, and one day we struck a herd of a few millions, and annexed sixty. Not bad for one rifle and one shotgun with twenty shells. We cached them in an igloo till the next day, when we would come after them with the dogs and sledges.

"Now about this time of the year cold was no name for it, for on the bed platform of my igloo in the mountain one night it was minus 17 degrees Fahrenheit, with two two-burner, four-inch wick stoves going, and you can guess what it was like outside—nearly minus 50 degrees. Well, the next day we went after them, I mean the hares, with the sledges and dogs, but on the way back, though we had only six miles to go, a terrific wind with a blinding drift came up, so we could not see ten yards. The Eskimos and I after fighting for a couple of hours to find our igloo gave up and sought shelter behind our sledges. They had forgotten our snow knives and could not build an igloo, and for twenty-four hours we were hung up there. I didn't care do as they did, lie down and let the snow cover me up and go to sleep, for fear I'd freeze, so I had an unpleasant time until the wind died down enough for us to find our way back to our igloo, not half a mile away, which we did some twenty-four hours afterward. The way we then proceeded to pile in the grub would have made you sit up and take notice. We each ate a ten-pound hare, tea, pemmican, and biscuit. Luckily we came through uninjured, though I froze the ends of four or more fingers. We killed eighty-three hares this trip, average weight nine to ten pounds. In the February moon two Eskimos and I went hunting to Clement Markham Inlet for an eight-day trip, but saw nothing.

"I left the boat for the northern trip February 19th. There was enough twilight to see to travel eight hours a day by, though the sun did not come back till March 6th, the last time I saw it in the fall being October 8th. I left Cape Columbia in command of the advanced supporting party on February 28th, with the thermometer at minus 50 degrees. At that temperature whisky froze stiff, alcohol so cold you can drop a match in it and it will not light, your nose

freezes every ten minutes unless you warm it up, and the ends of your fingers by this time are all excoriated from being repeatedly frost-bitten, etc.

"I went with the captain, who, with three men, was the trail picker. Three marches out I dumped off the load of all my party, and we headed for the land according to orders, some twenty-five miles distant in an air line. The Commander was to leave March 1st, and was to give me instructions on meeting the returning party what to bring back. Marvin also was to come back with me. A heavy wind from the east had gotten in the game the second day out, and faulted the trail, blowing the outside ice away to the west of the inside ice. The result was I missed Peary on my way to the land. After a good deal of lost time the original trail was finally found, and after doubling back some four miles in an unsuccessful attempt to overhaul him I lit out for Columbia because if I went any further after him I'd be unable to make land the same day and so lose valuable time. The march was a 'heller,' about eighteen hours long, with no time to eat; the sea ice had drifted from ten to fifteen miles west of where I had left the land ice, and the total distance we covered was not far from forty miles, fully one-half of which I ran.

"The next day a heavy wind prevented our starting, as we couldn't see the trail. This wind was only in evidence about five miles out to sea, so Marvin, who had been sent back as soon as the Commander had found I'd gone by, managed to reach Columbia late that day. The next day, March 5th, after being held up by a wind for five hours, we got under way, but where the sea ice and the land ice meet there was a stretch of open water about one hundred yards wide, extending in either direction as far as the eye could reach. Being shy both of airships, boats, and submarines, and as it was a bit too cold for swimming, there was nothing to do but wait for it to freeze over or be jammed together. This took place six days later. These six days were the longest and most hellish I ever want to see. It isn't the physical side of the game which is bad; it's

the mental strain. We knew how vital it was to get out to Peary with our loads and with a lot of alcohol. The tins of fuel he had with him went to the bad, or threatened to, the second day out, and without hot tea twice a day, with these temperatures, I doubt if man could live. I know I couldn't. Besides, the Eskimos were losing their 'sand,' wanted to put for the boat, said we'd all die out at sea, etc., and we were afraid of a wholesale desertion.

"On the morning of the sixth day the lead closed, and two Eskimos, both afflicted with cold feet, came to land and said Peary had been held up four days by open water four marches out. We trail made by the captain and me eleven days before, over which the Commander had gone. A storm and the darkness forced us to halt got under way at once, and following their trail, found the original at the first encampment. Here one of my Eskimos went temporarily 'bughouse,' and, stripped to the waist, began running around outside, looking for trouble. We managed to get his clothes on after a while, and prevented him from getting frost-bitten. That day we made a forced march of twelve hours or more, and got to the third encampment.

"The next day we marched about eighteen hours and slept at the fifth encampment. It was very cold, minus 53 degrees, and I froze my left heel, where I had done it last fall. The husky who was bughouse the night before thawed it out on his stomach. At the fourth encampment we got a note from the Commander saying he had left that camp the previous morning, March 11th, after waiting six days. It said: 'It is vital that you overtake and give us fuel.'

"We were now only one march behind him. Marvin called for a volunteer to go ahead and tell the Commander we were behind. The best man, named Sigloo, who afterward went to the Pole with Peary, responded, and after four hours' sleep went on. That was going some. After forty miles or so he went with only five gallons of alcohol, dumping off his loads. The rest of us were dead tired after the march the day before, and so were the dogs. The result

was we merely held our own and did not gain on the flying leader. A good rest, and the next day we decided to catch him or 'croak,' and we did without trouble, as he waited. I guess the finish of that Marathon race of four and a half days to catch the main party, which had a head start of more than forty miles, when the Commander came out to shake me by the hand, was the best day of my life.

"MacMillan, my roommate, went back from here with a badly frozen heel; the doctor, too. I went on five more marches to about 85 degrees 23 minutes, or about one hundred and thirty-six knots from the land, when I was sent back in command of the second supporting party. On reaching the shore, in spite of two cripples, I went a hundred miles west to lay down a cache, in the eventuality of the Commander being driven to the west. Then I headed for the ship, fair heel-and-toe walking every bit of the way, covering about eight hundred miles.

"I stayed on board seven days, when the remnants of the ill-fated third supporting party came in. As a rule the sledges come in at full speed, but these came in at a funeral gait, and Marvin nowhere to be seen. The first words of his two Eskimos were enough: 'Marvin gone—young ice.' The poor fellow was dead. The shock was pretty fierce, you bet. He was a dandy man, a fine leader, and devilish sandy. They came in Saturday at midnight.

"Now, MacMillan and Marvin were to have gone to the most northern point of Greenland to lay down a line of supplies in case the Commander hit that coast like he did last time. Well, Marvin being gone, I took his place, and after hurrying preparations, MacMillan, as cool, nervy, sandy and strong as they make 'em, and I left the 'Roosevelt' in thirty-six hours and reached Cape Morris Jesup, past Lockwood's furthest of 83 degrees 24 minutes, with ease. Here we stayed two weeks, 'Mac' going out to 84 degrees 15 minutes to sound, and I making tidal observations, according to orders. Here we lived high, killing forty-seven musk oxen in four

hunts, and dogs and men had sirloin and tenderloin all the time. As none of us had had any fresh meat in three months, it was more than good. I got mixed up in one herd of sixteen, and took some good photos of them. Then we killed them all by gun. I beat all records, Duffy's included, when I got within ten feet of a big bull, held at bay by two dogs, to take his photo, and he charged the dogs, which happened to be on a line between us. I only hit the high spots for a hundred yards or so.

"Coming back we made what I believe is a world's record in sledge traveling. The last two days or so we were all more or less snow blind. Rested up one week, then went off on a hunting trip. Killed four musk oxen, 100 miles away, and brought back a calf on the sledge alive to the boat, only to have it die the next day. When we got down to Eskimo land we put in about four days walrus hunting. In all, about seventy-two were secured. Some very exciting scenes occurred. Once a bull walrus, when we had engaged a herd of fifty, came up alongside of me, got his tusks on the gunwale of the boat so close to me that, to hit him with my rifle, I had to let her go off at port arms, as, if I fired it from my shoulder, the muzzle would have been beyond his head. It was exciting, all right, to have his great, ugly face right alongside of me, when it would have been easier to smash him with my fist than gun.

"On another occasion a big bull dived and put a large hole in the bottom, which, owing to its being double, we couldn't repair, and one man had to be kept baling. The walrus came up again, and I hit him in the head, wounding him badly but not killing him. He stayed down twenty minutes, and while we were all looking for him, smash! rip! bang! he came up under the stern, nearly knocked the bo's'un overboard, put a hole you could put both fists through just above the water line, dived, came up just fifteen yards off, gave his fierce battle cry of 'Huk! Huk! Huk!' and charged us. I got my artillery in action, and sunk him for keeps before he could do any more. When we reached the 'Roosevelt' we were half full of water. He was a scrapper, and don't you forget it.

"The worst jar I ever had was when 'Mac' was shot. The bullet smashed through two partitions, missed one man's head by two feet, passed two feet over the mate, who was lying on his side on the partition, two feet over my head on the other side, and smashed poor 'Mac' all to hell. I heard the report in my sleep. Poor 'Mac,' saying: 'My God, he has got me,' jumped out of bed, too. I saw him hanging on to one arm while blood was everywhere. Quoth he: 'Gee! this is worse than being wakened by an alarm clock.' Maybe he isn't sandy. He is nearly well now, thank God."

The shooting here referred to came about in the following way: Peary had ordered one of the crew to clean a rifle that had been used in the walrus hunting a week before. MacMillan was asleep at the time in his bunk on the port side of the ship, two rooms removed from that in which the gun was being cleaned. He slept on his right side with his left arm thrown over his head.

In ejecting a loaded shell from the rifle the man cleaning it accidentally exploded the shell. The bullet passed through the pine partition a few inches over the head of the man who was sleeping in the next room, went on through the room and the further partition and struck MacMillan's left forearm, where it lay thrown across his face. It tore the flesh from the arm to the wrist, which it penetrated; thence it passed through his right shoulder and then through the finger of his left hand, which was clasping the shoulder.

When Dr. Goodsell examined MacMillan's wound he found that extraordinary luck had shielded the Worcester Academy professor. Not a bone was broken and no arteries were severed.

"Your letters, clipping, and rifle received from the 'Jeanie' August 23d. Many thanks. They were great. Also whaler's mail left by Adams, of the 'Morning Star,' two days later. It was bully of you to think of getting so much up to me, especially Mickleson and Amundsen, also letters from my friends."

The "Jeanie" here spoken of was the relief ship sent north for Cook, also to bring back the young sportsman, Whitney.

"I did most of the photograph work. The big camera was great, especially the finder, which, in taking photos of musk ox, etc., enables you to keep an eye on the brute, so as to be ready to make a quick getaway when he charges. A few yards start gained in this way is very useful in avoiding being caught in close contact with his horns.

"I broke through young ice several times, but got out all right. It wasn't very cold when I went in.

"Peary has been just great. This expedition from start to finish is a picnic compared to what sufferings most Arctic expeditions go through. We went in parlor cars, thanks to the Commander who has worked the Arctic ice problem out and down to a science. Instead of the inactivity of previous expeditions in the winter, we were all out, most of us going 500 to 600 miles. Thirty years ago a man venturing on an extended journey of several hundred miles would have been committing suicide. Nares, the leader of the English expedition of 1875-6, says that men can't face a wind in a temperature of minus 30 degrees, but we did that, and a darn sight lower, in the wind. He also says, 'Only for life or death must a man go out in the fearful cold of March.' We went out all winter, and the English didn't start from the boat till April 2d.

"Just one example of the advantage of dog power instead of man power. Beaumont, a man of indomitable energy, of the English expedition, went to his furthest on the Greenland coast at thirty marches, which Mac and I covered in spite of two short ones on account of smashed sledges. He and his men were dead at the end, but we were going at a canter.

"Greely, speaking of Lockwood and Brainard's work, says about as follows concerning an attempt to beat their mark furthest north, obtained on the Greenland coast, 'that only perfect ice conditions, indomitable energy of leader and men, would enable their record to be smashed.' They took a whole season to do it. We did it, coming back from the northern expedition with ridiculous ease.

Just a picnic from start to finish. This is not blowing my horn, but simply to state a few facts that will speak for themselves.

"These performances were due to the great system Peary has developed, to his breaking us in the best way so that when we started north in February Dr. 'Mac' and I, who had never been in the Arctic before, had stacked up against conditions many other expeditions would never dare face, and had sledged enough to make us veterans. Result, confidence in ourselves and equipment, and, what's more, as to the conditions likely to be met with.

"Another point, in a country where the English found no game they died of scurvy. Where Greely, Brainard and Lockwood, fine men as they were, could obtain no game, we, through the Eskimos, never were in want of fresh meat, and, unlike what you will find in most books, I don't imagine you will find in my diary or in those of the others, which are fairly voluminous, any evidence that I was conducting a clinic or a continual squeal on the cold.

"I can tell you this member of the class of 1908 has been up against some queer conditions, and I have learned many things since I saw you last. Possibly the queerest, but not the most uncomfortable, was when my Eskimo and I had run out of fuel after being hung up at Cape Fashaw Martin for four days by heavy winds. We had to beat in the teeth of a howling gale and drifts so bad the dogs could hardly be induced to face them, which nipped and froze our faces for twenty-five miles, when it was so cold we had to run practically the whole way to keep warm, but I could appreciate the humorous side of it.

"One thing is sure, this Arctic shows, as you have often told me when up against it good, and you are here a good deal of the time, there is nothing like going at everything with a grin and good-naturedly, like the Eskimos; and no matter how scared, as when I had an angry Eskimo, whom I had thrown, point his rifle at me and look as though he meant business, or when crossing ice which bends beneath you and the thermometer in the minus fifties, so if you break

through, c'est fine—no matter how worried or put out, to keep that grin that won't come off there, and don't show a sign of fear, as the Eskimos are none too sandy anyhow, and it's up to you to furnish the ginger, steam, and sand to keep them jollied and care free no matter how you feel.

GEORGE BORUP."

Of equal interest and of value in giving another and different phase of the northern experience is that of Professor MacMillan, as told on the deck of the "Roosevelt" to newspaper men while lying at Battle Harbor, Newfoundland. From the lips of this quiet-spoken, unemotional man from Massachusetts came tales the like of which are rarely told. He stood in the center of a group of correspondents on the grease-caked forward deck and as simply as he would recite the taking of a hazard or the toll of mallards in a shooting blind he told of finding relics of men who had given up their lives in pursuit of the aurora's end, and he read selections from the records dead men left behind them in the ice wilderness twenty-five years ago. The correspondents halted in their note-taking and tangled their memoranda because of the spell of his words.

"Hardships!" he said, in answer to a question, "why, yes, there were some; but they were forgotten each night after we had turned into snug igloos. The excitement of the whole thing far outweighed the dangers, and all in all, I don't believe you will find a man on the ship who realizes to-day that what we considered just a bully good time was really an event so important that you fellows chase us away up here to get the news of it. If they start to give us any demonstration in New York, we won't know how to take it. Of that I am certain."

The man who stood with his fur-clad head leaning against the mast and his hands jammed into his pockets found the correspondents importunate. They wanted all he had to tell. He shrugged his shoulders good-naturedly and began to speak of remarkable adventures in the light of commonplaces.

"I had to turn back at 85 degrees because I had frozen one of my feet pretty badly." Others had said that MacMillan kept up for days with his frozen foot before Peary himself ordered him back. "You see, we all wore grass between our deerskin socks and the soles of our kauiks or boots. Should that grass slip out and allow the soles of the feet to touch the boot insole itself the feet would surely freeze in cold weather. That's what happened to me. I had my foot frozen on March 15th, when the thermometer was down to 58 degrees below zero.

"So Peary ordered me dragged back to the ship on a sledge and left with me the command that when I got to the 'Roosevelt' I should go with Marvin on a geodetic survey and tidal measurement expedition to Cape Morris K. Jesup in North Greenland. But I had to take Borup instead of Marvin, because before we started the Eskimos had come to me to tell of Marvin's death. They hung their heads in the telling and pointed downward, repeating, 'Young ice, young ice.' We understood.

"One day before we left the 'Roosevelt' for Greenland Borup and I tried a little stunt. There was a ribbon of open water near the ship and we stripped and plunged in. It was on April 17th, I remember, and the thermometer stood at 29 degrees above. When we got out we found that the ice wasn't as cold at the water and we ran up and down on the ice sheet near the ship for about five minutes while the huskies yelled with laughter. They thought we were off our dot, first because we had taken a bath at all and then because of the manner of our taking it.

"On April 19th we left the ship for the trip across Grant Land and North Greenland to Cape Morris K. Jesup. We had six sledges and forty-eight dogs with four Eskimos who helped drive. We took provisions according to Peary's order to put in caches along the Greenland coast in case he might be carried thither on his return trip as he had been on his return from the 87 degrees 6 minutes mark in 1906."

Cape Morris K. Jesup, it is well to say, is the most northerly and nearly the most easterly point in that region, it being in the north of an island known as Peary Land, and the best place to leave an easterly food cache for the explorers, in case they were rapidly carried to the east, as in the former expedition. MacMillan continues:

"On April 23d we crossed Robeson Channel and we reached Hand Bay, in Hall Land, the next day. In four marches we made the distance that the Lockwood and Brainard expedition took twelve days to cover. We reached Peary's cairn at Cape Washington which he had erected in 1900 at 83 degrees 30 minutes, on May 4th, and we got to Cape Morris K. Jesup two days later. We had been following the route of the Lockwood-Brainard party up as far as DeLong fiord and one day we found directly in our path a linen cuff with the name 'Lockwood' pencilled on the face of it. It had been there ever since Lockwood himself had passed that way.

"It was on May 8th that Karko and Wee-Shah-Ok-Sie, two of the 'Roosevelt's' Eskimos, hurried up to us with a message from Peary."

MacMillan went to his bunk and returned with a worn and soiled sheet of paper bearing the "Roosevelt" letterhead. It read:

"APRIL 28, 1909.

"MY DEAR MACMILLAN:

"Arrived on board yesterday. Northern trip entirely satisfactory. There is no need of Greenland depots. Captain Bartlett came aboard the 24th. Concentrate all your energies on tidal observations and line soundings north from Cape Morris Jesup. Use intended supplies for me for this purpose.

"COMMANDER R. E. PEARY."

"You can imagine how happy that letter made me," MacMillan continued, "although it left so much unsaid. How successful had Peary's northern trip been? Did he mean that he had reached the

Pole? We hardly dared to believe it, although we had both left him with conditions favorable for the achievement.

"We returned from Cape Morris K. Jesup to the ship as quickly as we could after completing our observations.

"Oh, by the way, I haven't told you what I found at Fort Conger, have I?" ejaculated MacMillan.

The correspondents shook their heads.

"Well, you may find it interesting," MacMillan remarked as a prelude to his tale.

This did not belong to the expedition above described, but to one made in November, 1908, when the "Roosevelt" was in winter quarters at Fort Sheridan. He and Borup had started south on a hunting expedition. When ninety miles from the ship, in latitude 81 degrees 44 minutes, they had come on the base of the Greely expedition. Fort Conger it was then and is still called. Here it was that the expedition had established a base after being landed from the steamer "Proteus" in 1881, and it was this last bulwark of safety that Greely and his men abandoned in 1883 after vainly waiting for the return of the "Proteus." The relief ship had been crushed in the ice, and the consequent tragedy of slow starvation at Cape Sabine, the point reached by them in their retreat south, is common in the annals of Arctic exploration. The particulars of the Greely horror will be given in a later chapter.

The two hunters came upon the old stronghold of the Greely expedition in the middle of the Arctic night some time in January. The storehouse, with its twenty-seven years of snow blanketing, still stood as it had been left the day that the sorely stricken men of the "Proteus" had forsaken it to turn southward—just a monument to the lure of the northland, there alone in the mystery of a dead world.

MacMillan and Borup entered the place after cutting through the snowbanks blocking the door. They made a light and then began to examine the relics of men some of whom had afterwards

died in the misery of Cape Sabine's shores, while others escaped death only by a mere hairbreadth.

One thing they found was an empty trunk with the name David L. Brainard on the cover. This MacMillan dragged out of the hut and used to protect himself while taking observations.

Then in carefully written pages they found General Greeley's report of the food caches he had made throughout the vicinity of Lady Franklin Sound. It was all very methodically and carefully entered, an ironical testimony to the fruitlessness of man's precautions in the desolate ice waste.

In a chest they found General Greeley's dress uniform, brass buttons and gilt epaulets untarnished and the navy cloth unfretted by moths, the coat being in so good a state of preservation that he wore it. The dress uniforms that other men had carried north with them in their vanity reposed in other chests. There were also cuff links, scarf pins and the whatnots of a man's toilet.

Over in one corner was a school text-book, evidently a boy's book, which had seen much use. In a boyish hand on one flyleaf were written some words, and as McMillan now held the page open the correspondents copied:

"Lieutenant Fred Kislingbury.

"To my dear father from his affectionate son: May God be with you and return you safely to us.

"HARRY KISLINGBURY."

Lieutenant Fred Kislingbury was one of the seventeen men who slowly starved to death at Cape Sabine. His body lay there under a cairn of rocks and the snow for many years. More recently it was brought home to his native city of Rochester, N. Y.

On an opposite leaf were the names of several students, evidently at Assumption College, Sandwich, Ontario, and the address presumably of Harry Kislingbury, which was Fort Custer, Montana.

Another of the dead lieutenant's books lay near by. It was a hymnal of temperance songs and in the flyleaf was the inscription:

"To Lieutenant Frederick Kislingbury, from his old friend and well wisher, the author, George W. Clarke, Detroit, Mich., May 18, 1881."

Between the pages of a magazine of the date of 1881 were developed plates that had belonged to George W. Rice, the official photographer of the Greely party. On the floor was a fugitive sheet of paper closely written. It was the dope sheet on all the best performances of the trotting horses in America in 1880.

MacMillan brought out from a bearskin wallet another folded sheet of foolscap and spread it on top of one of the sledges.

"This may interest you also," he said, and the correspondents craned their necks. There was a part of a humorous speech that a member of the party had prepared, possibly to enliven some holiday feast that was celebrated before the pinch of famine came—just two paragraphs and the formal opening, "Mr. Toastmaster."

"There are some fair friends somewhere, who doubtless would be pleased to be about our festal board to-night," were the words on the foolscap, "but the somewhat inclement weather probably has prevented their attending. I'm afraid the gentlemen assembled here to-night will have more than the usual post-prandial difficulty in returning to their homes, for the aurora borealis is confusing at best."

Borup picked up in the hut an ocarina, one of those wooden wind instruments that look like a sprouted sweet potato. The latitude of Fort Conger was cut into the wood.

There was much food in the hut, food which the Greely party had been forced to leave behind on the despairing march to the south. Hominy, coffee, tea, canned potatoes, canned rhubarb, bacon which Observer Ernest, long now in the New York Weather Bureau, had piled with his own hands, so he said; hard bread and sugar

—all these stores which had been denied to the twenty-five desperate men who wintered at Cape Sabine in 1883.

McMillan and Borup ate some of the food and took other parts with them when they left. It was as sweet and clean as the day it was placed there.

Other relics of former exploring expeditions these two from the "Roosevelt" found during the course of their long hunting trips. On Littleton Island, in frozen Smith Sound, they came across the remains of the frame house that Commander Hall, of the ship "Polaris," had erected at Thank God Harbor on his expedition of 1871. The Arctic winds had strewn most of the timbers over half the island, and nothing but some of the foundation posts remained. Near by were some brass fittings stamped "U. S. S. 'Polaris,' Washington Navy Yard, 1871."

Still another record of past incursions into the frozen silence fell to the hands of the "Roosevelt's" men. One day they came to the hut of an Eskimo, who called himself Jacob Schunah, away down a hundred miles and more south of the "Roosevelt," at Cape Sheridan. Asking for food, McMillan was surprised to have whale meat served on a real china plate. He turned the plate over when he had finished his meal and on the bottom was the single word "Gjoa," the name of the ship in which Roald Amundsen discovered a northwest passage to the Pacific in 1903.

"I offered the woman a cup in exchange for the plate, and she jumped at the chance swiftly, lest I change my mind. When she got the cup she laughed at me, thinking she had bested me in the bargain, but I would have been willing to give a hundred cups for that one bit of china.

"During our expeditions about Cape Sheridan we came upon the winter camp of the British party which went in search of the Pole in 1876 under Admiral Sir George Nares.

"We found the beach literally covered with empty coal bags. Several tons of coal and a great quantity of firewood was piled

against the cliff, crockery and cartridges were scattered about, indicating a hasty departure. The cartridges were still good after thirty-three years, but I imagine they would have done little execution. They did not fit our guns, so we were unable to test them.

"While the party was quartered here they used a small push-cart to carry their wood and water from the hills. This cart was taken away, but the tracks of its wheels, though made many years ago, were as plain as if made yesterday. I made some photographs which show how well they have been preserved."

Professor McMillan in every case took to the ship all that was practical of the relics to be turned over to the Peary Arctic Club.

We may close with the following telegrams, which tell their own story. Taft evidently is not especially eager to annex the North Pole.

"William H. Taft, President of the United States: Have honor place North Pole your disposal. "R. E. PEARY, U. S. N."

"Commander R. E. Peary: Thanks for your interesting and generous offer. I do not know exactly what I could do with it. I congratulate you sincerely on having achieved, after the greatest effort, the object of your trip, and I sincerely hope that your observations will contribute substantially to scientific knowledge. You have added luster to the name 'American.'"

"WILLIAM H. TAFT."

CHAPTER IX

Robert E. Peary, the Indomitable Polar Explorer

TO briefly summarize for the reader the earlier events of Commander Peary's life, before taking up the story of the great achievements which have brought him into the limelight of public approbation, we give the following concise account of his early history and of his services in the employment of the government before he began his famous explorations:

Robert Edwin Peary is a Pennsylvanian by birth, having been born at Chester Springs, near Altoona, in the western section of that State, on May 6, 1856. Descended from a family of hardy Maine lumbermen, his immediate ancestors were Charles Peary and Mary (Willey) Peary. His father had migrated to Pennsylvania and became engaged in the lumber business there, but died in 1858, when his son was two years old. We next hear of the family in Portland, Maine, to which they had removed and where the boy's early life was spent and his primary education obtained. Having prepared for a higher education, he entered Bowdoin College, and graduated there with second honors in 1877. Throughout his college career the study that most fully interested his attention was the subject of Arctic exploration, which from early life had held a peculiar fascination for him, and was the subject of his most earnest reading.

On leaving college he adopted the profession of civil engineer, for which he had fitted himself in his college career, his first employment being as a land surveyor at Fryeburg, Maine. In 1879 he became engaged upon the Coast and Geodetic Survey at Washington, remaining in this field of duty until 1881.

In the latter year the young surveyor passed the Navy Department examination for the admission of civil engineers, and was commissioned an engineer in the naval service, October 26, 1881. He has since remained a civil engineer in the navy, having advanced from the rank of lieutenant to his present rank of commander.

In this service Lieutenant Peary built a pier at Key West, Florida, in 1881. This the contractors had abandoned, as impossible to be built for the appropriation, but the young engineer completed it at a cost well within the sum appropriated. He subsequently became sub-chief of the Inter-Oceanic Canal Survey in Nicaragua, Central America, and in 1886 he was made engineer-in-chief of this important survey, in connection with which he invented some important apparatus. In 1888 he was sent to superintend the building of the new dry-dock at the League Island Navy Yard in Philadelphia.

Previous to this he had taken the first step toward the realization of his boyhood dream, that of adventure and research in the polar region. Greenland was as yet the utmost goal of his ambition, and in 1886 he applied for leave of absence from his naval duties to visit this realm of his ardent hopes.

His application was granted, and in July of that year he went north on the first of his many expeditions. It is interesting to be able to state that on this occasion he took with him Matthew Henson, the faithful mulatto servant who has been with him on every expedition since and has formed one of his chosen companions on his dashes for the Pole. Henson was a Philadelphia boy who had made his way to Nicaragua, where Peary engaged him and has kept him as his personal attendant ever since. It was not Lieutenant Peary's purpose on this expedition to seek the Pole, but to explore the interior of ice-clad Greenland, in which no white man had gone inward beyond the lowlands bordering the coast. It was an excursion not without its fruits. Starting from Disco Bay, near the seventieth degree of latitude, he penetrated many miles into the interior, and discovered

that Greenland was an elevated island, the elevation, however, consisting of a mountain height of eternal ice, the depth of which no one knew. For all that could be told this icy elevation might cover an interior hill country or a low land like that of the coastal plain. The result of this expedition was to acquaint him with the state of affairs in the interior, information which served him in good stead in his crossing of Northern Greenland in 1892. In this field he was a pioneer, Nansen's crossing of Southern Greenland not being achieved until several years later.

It was after this expedition that Peary's marriage took place, his bride being Miss Josephine Diebitsch, of Portland, Maine, whom he had known and loved since boyhood. As events proved, she was a born mate for an Arctic explorer, as she showed in their later careers.

The disaster and suffering which characterized the termination of the "Polaris" and Greely expeditions did not tend to recommend Arctic exploration as a national enterprise to the Government of the United States. But a vast amount of highly valuable information had been obtained, not only by these expeditions, but also by the expedition sent out by the British Government under the command of Sir George Nares. And, in addition to the information, a further knowledge had been gained, the knowledge that the same spirit of indomitable pluck, the same tireless energy, and the same loyalty and devotion to duty dominated both branches of the great English-speaking race. These facts stirred up the adventurous to further efforts.

The discoveries along the north coast of Greenland opened up the very interesting question whether that land did not extend right up to the Pole itself. As far as any one had penetrated to the north of the coast, land was still to be seen farther on; it was an open question whether this great ice-covered country was an island, with its northern shores swept by the polar ice-floes, or whether it extended to the dimensions of a continent in the polar region.

The problem appealed strongly to two explorers whose names, by reason of their exploits during recent years, have become familiar. They are Nansen and Peary. The former, by his dash for the Pole, during which he surpassed all previous records of the "farthest north," had dwarfed his Greenland performances; the latter, by his journey of 1,300 miles over the ice-crowned interior of Greenland, went far to prove the insular character of the country.

Lieutenant Peary, failing to obtain government supplies for a scheme of an overland journey to the northern coast of Greenland, devised by him in 1891, was supported in it by the Philadelphia Academy of Natural Sciences. The expedition was necessarily small, but that did not affect its utility. It was, moreover, unique, by the inclusion of Lieutenant Peary's wife as one of its members; the account which she has given of her sojourn in high latitudes is one of the most interesting of books on the Arctic regions.

The party left New York on June 6, 1891, on board the steamer "Kite," for Whale Sound, on the northwest coast of Greenland, the party including several prominent members of the Philadelphia Academy. The voyage was satisfactory in every way until June 24th, when an unfortunate accident befell the leader.

The "Kite" had encountered some ice which was heavy enough to check her progress, and, to get through it, the captain had to ram his ship. This necessitated a constant change from going ahead to going astern, and, as there was a good deal of loose ice floating about, the rudder frequently came into collision with it when the vessel was backing. Lieutenant Peary, who was on deck during one of these manœuvres, went over to the wheelhouse to see how the rudder was bearing the strain. As he stood behind the wheelhouse, the rudder struck a heavy piece of ice and was forcibly jerked over, the tiller, as it swung, catching him by the leg and pinning him against the wall of the house. There was no escape from the position, and the pressure of the tiller gradually increased until the bone of the leg snapped.

Dr. Cook, who formed one of the party, immediately set the limb; but the sufferer refused to return home in the return voyage of the ship, and when, a few days later, the "Kite" reached McCormick Bay, he was carried ashore strapped to a plank.

The material for a comfortably sized house was part of the outfit of the expedition, and this was in course of erection the day that Lieutenant Peary was landed. For the accommodation of himself and wife, a tent was put up behind the half-completed house, and, as a high wind arose, the remainder of the party returned on board the "Kite."

As the hours passed away the wind became stronger. The tent swayed to and fro, and Mrs. Peary, as she sat beside her invalid and sleeping husband, realized what it was to be lonely and helpless. She and her husband were the only people on shore for miles; her husband was unable to move, and she was without even a revolver with which to defend herself. What, she asked herself, would be the result if a bear came into the tent? She could not make the people on board the "Kite" hear, and she was without a weapon. Though throughout the stay in the north Mrs. Peary proved herself not only to be a woman of strong nerve and self-reliance, but also an excellent shot with either gun, rifle, or revolver, yet it was as much as she could stand when her anxious ears caught the sound of heavy breathing outside the tent.

For a time she sat still, fearing to disturb her husband, until the continuance of the sound compelled her to look out. A school of white whales were playing close inshore, and it was the noise of their blowing, softened by the wind, which had so disturbed her. But so self-possessed was she over it that her husband did not know, till long afterwards the anxiety she had experienced during the first night she spent on the Greenland shore.

The following day rapid progress was made with the house, and some of the party stayed on shore for the night, so that there was always some one within call of the invalid's tent until the house

was completed and he was removed into it. By that time the "Kite" had started home again, and the little party of seven were left to make all their arrangements for the winter.

They had determined to rely entirely upon their own exertions for the supply of meat for the winter and also to obtain their fur clothing on the spot, killing the animals necessary for the material and engaging some of the local Eskimos to make up the suits. Deer would give both meat and fur, and as there was every prospect of the neighborhood affording these in plenty, as soon as the house was up and the stores packed, the majority started away in search of game.

The place where they had erected their camp was a verdure-covered slope lying between the sea and the high range of bluff hills which towered about one thousand feet over them. In the spring the ground here was covered with grass and flowers, the bay in front was full of seal, walrus, whales, and other marine animals, and along the hills behind experience showed that land game was present in abundance. The Etah Eskimos, the most northerly people in existence, lived along the shores of the bay and neighboring inlets, and, as soon as the camp was settled, they were kept busily employed in the making of fur garments, proving themselves docile and peaceful. It was often difficult for the members of the expedition to realize that the site of their camp, with the abundance of food to be had, was only from fifty to eighty miles distant from the spots where the castaways of the "Polaris" suffered so acutely and the members of the Greely expedition slowly starved, many of them to death. For more than a year the little party of seven lived in good health, without a suggestion of scurvy making its appearance and with only one fatality, this being accidental.

The first hunting expedition was in search of deer, and everybody took part in it except the crippled leader and his wife. For two or three days the hunters were away, for they were fortunate in discovering a herd of deer which they followed until all were

bagged. With as many as they could convey of these the hunters set out for the camp. Their approach was duly signalled, and upon hearing that they were returning laden, Lieutenant Peary, for the first time, hobbled out of the house on crutches. As they came up he rested on one leg and his crutches, while he photographed them and their trophies, after which the double occasion was celebrated by a banquet in which venison played an important part.

The deer skins were very important additions to the stock of material from which the winter clothing was to be made, but other kinds of skins were needed, especially of the marine animals, as well as some native tailors to fashion them into coats, hoods, mittens, and all the other articles of Arctic wear. A boat party was therefore despatched along the shores of Inglefield Gulf to spy out the localities where walrus was to be found, and to induce some of the natives of a village, seen from the "Kite," to come over to the camp and sew the new garments.

The party was successful in both instances, for a number of walrus were seen and an Eskimo family came back by the boat. The "huskies," as the explorers familiarly named these people, consisted of a man, his wife, and two little children, and they moved to the camp with all their belongings. The dress of these northern natives, which the explorers found it advisable to copy in most particulars, consisted of tunics and short breeches with sealskin boots reaching above their knees. The costume of both sexes was very similar, the only practical difference being in the tunic or jumper, that of the woman having the hood longer and deeper for the accommodation of her infant. They had broad, good-natured faces, not especially handsome nor intelligent in appearance, and distinctly dirty.

In fact, the use of water, other than for drinking, did not appear to be known to them, and it was very much a question whether they had ever tried the experiment of a wash. Mrs. Peary was once tempted to give one of the little ones a bath, and she records how intensely amazed it was at being put into the water, although it was

more than two years old. Surviving the shock, however, it manifested its pleasure by lustily kicking and splashing. Perhaps later it enjoyed a well-merited honor amongst its own people as the only one of the tribe who ever passed through the extraordinary ordeal of soap and water.

In consequence of their innocence of water as a cleansing medium, the "huskies" had two distinguishing characteristics not entirely pleasing to more civilized people. They carried around with them a distinctly impressive aroma, and also thriving colonies of what are politely termed parasites.

In the matter of clothes they carry their wardrobes on their backs. Fur garments do not wear out very rapidly, and, when a "husky" is full grown, the suit of clothes, made in honor of the event, remains in constant wear until one of two things happens. If the man kills a bear, he has a costume made of the skin and discards the ordinary sealskin suit for it. If he does not kill a bear, he wears the sealskin suit until it no longer keeps him warm, when he gets another. In their snow-houses during the winter and storms, if the temperature is too warm for them in their thick clothing, they take the clothing off; being a primitive people, their manners are as simple as their minds.

The first arrivals at the Peary camp were, however, very useful people. There being no trees in this far northern region, and wood, consequently, being one of their most valued treasures, they were for some time unable to comprehend how the timber to build the house had been acquired. When they saw a fire made in the stove of refuse bits of wood they were still more amazed. Never before had they seen so much fire all at once, and the man, growing curious, kept on feeling the stove to see what the effect would be. When it was hot enough to burn his hand he developed a wholesome respect for it, and afterwards preferred to look at the uncanny object from a distance.

The problem of how the sewing was to be done was rather a

difficult one to the white people for a time. To allow the furs to be taken into the Eskimo tent was to invite the introduction of an insect population of which it would be impossible to get rid later. On the other hand, to allow the "huskies" to enter the house too frequently was equally dangerous from the sanitary point of view. A compromise was effected, by the Eskimo woman doing the sewing near the door of the house with some one always keeping an eye on her. Later on, when it was found that little danger of the spread of insects existed if reasonable care were taken, the workers sat inside the house. They were fairly deft in handling the needle, and the suits they made for the party were all excellent and serviceable. These were made on the native pattern, and the later experience of Lieutenant Peary and his comrade Astrup in their journey over the great ice-cap proved that the native pattern was the best for Arctic wear.

The woman being set to work, a boat expedition in search of walrus was organized, with her husband as guide, Lieutenant Peary and his wife also going. They had not proceeded very many miles up Inglefield Gulf before a light breeze when they saw, on a floating piece of ice, a dozen or so of the animals huddled together apparently asleep. Sailing gently towards them, every one with a rifle ready, a sudden puff of wind sent the boat ahead quicker and farther than was intended, and it struck the ice. The walrus, never having seen a sailing boat before, looked round at it without paying any more attention than if it had been another piece of ice. But the sight of so many valuable creatures within reach of his harpoon was too much for the Eskimo, and he buried the weapon into the nearest.

At once the attitude of the walrus changed. The wounded member of the tribe tried to escape, bellowing in its pain, and the rest slid off the ice into the water and surrounded the boat. Others from neighboring ice patches charged rapidly on to the scene, and the situation of the boat and its occupants was dangerous in the extreme. The poor Eskimo, his face showing the terror he felt,

crouched down in the boat, evidently expecting to be annihilated by the furious animals that surged round. As they came up to the boat, they tried to get their powerful tusks over the gunwales, and, had one succeeded in doing so, there would have been little hope of any one escaping. Yet to keep the angry crowd off was no easy matter.

They swarmed all around, and not less than two hundred and fifty were estimated to be engaged in the attack. Lieutenant Peary, with his injured leg, sat in the stern of the boat, firing at them, and the other white men also kept up a fusillade, Mrs. Peary giving evidence of her strong nerve and courage by sitting beside her husband and loading the weapons as soon as they were emptied. The walrus came on in numbers to the attack, but when fired at all those nearest to the boat leaped out of the water, and then plunged out of sight. There was always the danger of one of the huge creatures rising under the boat, and so capsizing it; but the occupants had no time to think of this. Directly one batch jumped and disappeared, another hastened forward to meet the volley of bullets, and be in turn succeeded by another batch.

The boat was meanwhile gradually approaching the shore, and as the water became more shallow the walrus exhibited less desire to come to close quarters, until, at last, the adventurers found that they had beaten off the last of the swarm. The main body had retreated far up the gulf, only a few remaining near. Several of those which had been shot, however, were floating on the surface of the water, and it was decided to go back and secure them, even at the risk of another attack. Already some of them were sinking, and many must have gone down while the fight was in progress. There was a necessity for haste if any of the slain were to be secured, and with rifles loaded and ready for a fresh attack, the boat was headed towards the floating carcasses.

The operation of securing them was performed without any interruption from the survivors, and a run was then made for the shore, where the Eskimo said a lot of sealskins were "cached." This

is the term used in the Arctic regions to denote the local method of storing food or possessions. A space is hollowed out in the ground, which, even in the summer time, is frozen hard a few feet below the surface. The articles to be stored having been placed in the space, it is covered over with stones, and the "cache" is completed. Throughout the winter the contents become frozen into a solid mass, which, protected by the stones or other covering, does not thaw out during the short summer, and so remains in a good state of preservation for an almost indefinite period.

Occasionally the "cache" fails to preserve the articles of food entirely in that state which by the European is termed "fresh"; but as they rarely have recourse to "cached" provisions, it does not matter very much. The Eskimo, who constantly preserves his winter supplies in this manner, has, happily for himself, easier notions about the state and quality of his food. This was brought home to the party very forcibly. They had visited several "caches," and obtained enough seal-skin for their purpose, and, having enjoyed some refreshment, were considering their return. The Eskimo, Ikwa, then told them that, as all the flesh at the camp was recently killed, he and his family did not like it. There was, he said, a fine seal cached in the neighborhood, which would form a delicious store for him and his family, and if the leader allowed him to move it to the boat, and convey it to the encampment, he would be prepared to yield some of it to the members of the party for their own special enjoyment. The seal was a beauty, he said, and just in the very pink of condition. The necessary permission having been given, Ikwa hurried away for his treasure.

Shortly after, the members of the party noticed a strange penetrating odor in the air which they at first attributed to the flayed walrus. It steadily increased, until they were unable to tolerate it, and started out to seek the cause. As they emerged from under the shelter of the jutting rock where they had been resting, they descried the little Eskimo staggering towards them under the burden

of a seal almost as large as himself. The creature had been "cached" about two years, and was in such a state that gentles fell from it at every step the man took, and, as Mrs. Peary recorded in her diary, both the sight and the scent of it overpowered the white people. But to Ikwa it was just in good condition for eating, and he was especially indignant when he was made to relinquish it. His clothes, however, would not part with the odor, and for many days the members of the expedition had reason to remember that Eskimo like their game high.

As the time passed, and winter approached, every one was kept busy preparing for the long dark night, and for the journey over the ice-cap which was to be undertaken directly spring began. Several families of Eskimos were now residing near the encampment, the women mostly engaged in making winter fur garments for the members of the expedition, and the men in hunting. As dogs were required for the sledging expedition, constant bartering went on between the Eskimos and the white men, and the latter undertook occasional journeys to localities where other members of the tribe were encamped.

A great deal of very interesting information was thus derived about the natives, who were, so far as known, the most northerly living people in the world. Mrs. Peary, as the first white woman they had ever seen, was a particular object of attention. As their custom is for men and women to dress very much alike, they could not quite understand Mrs. Peary's costume, and when the first arrivals saw her and Lieutenant Peary together, they looked from one to the other, and ultimately had to ask which of the two was the white woman.

The tribe did not number three hundred in all; they held no communication with the Eskimo farther south, and, except for the occasional visit of a sealer or a whaler, knew nothing of the outer world. None had ever seen a tree growing, nor had they ever penetrated over the ridge of land which lay back from the coast, and over

which glimpses were caught of the great ice-cap. The latter, they said, was where the Eskimo went when they died, and if any man attempted to go so far the spirits would get hold of him and keep him there. They consequently warned Lieutenant Peary against venturing. There was no seal up there; no bear; no deer; only ice and snow and spirits, so what reason had a man for going?

Their belongings were extremely simple. A kayak, a sledge, one or two dogs, a tent made of walrus-hide or seal-skin, some weapons, and a stone lamp, comprised, with the clothes they wore, their property. Wood was the most valuable article they knew, because they could use it for so many purposes, and had so little of it. The possession of knives and needles was greatly desired; but scissors did not appeal to them, since what they could not cut with a knife they could bite with their close even teeth. Money had neither a suggestion nor a use with them; trade, if carried on at all, was merely the bartering of one article for another.

The animals they liked best were dogs and seals; the former being their beast of burden and constant companion, the latter the provider of food, raiment, covering and light. Every seal killed belonged to the man who killed it, but the rules of the tribe required that all large animals should be shared among the members in the neighborhood; the skin of a bear, however, remaining in the possession of the man who secured it. But so unsophisticated and easy-going are these contented people that individual property scarcely exists with them; every one is ready and willing to share what he has with another if need be. The articles borrowed, however, are always returned, or made good if broken or lost. The boys are taught how to hunt, how to manage the kayak and sledge, and how to make and use the weapons of the chase, while the girls are taught how to sew the fur garments, and keep the stone lamp burning with blubber moss, so as to prepare the drinking water and the frizzled seal flesh they eat. This constitutes their education, and beyond this their chief desire is to live as happily as they can, which, ac-

according to those who have been amongst them, they manage to do merrily and well.

During the visits paid to the different encampments by Lieutenant Peary and his wife, about a score of dogs were obtained, a number which would be sufficient to carry out the work of the ensuing spring. They were usually obtained in exchange for needles and knives, but the purpose for which they were needed always formed a subject of wonder to the unambitious "huskies."

By the time that a return was made to the house—Redcliff, as the explorers named it—the season was well advanced towards winter. The roof and sides were covered with walrus hide, and moss, gathered in the early autumn, was stuffed into any crevice through which the cold wind might find a way. The drifting snow soon piled up round the walls and over the roof, and the extra covering added to the warmth and comfort of those within. Fur clothing was now worn generally, and the little party, keeping in good health and spirits, managed to pass the gloomy period of winter with little to mar their contentment.

Christmas they celebrated in proper form by having a sumptuous dinner, the menu of which, preserved by Mrs. Peary, is worthy of being quoted, as showing what can be done in a place where shops are unknown and darkness reigns at midday. The feast consisted of salmon, rabbit pie and green peas, venison with cranberry sauce, corn and tomatoes, plum-pudding and brandy sauce, apricot pie, pears, sweets, nuts, raisins and coffee: a very creditable repast to be put on the table of an Arctic residence.

When every one had satisfied the demands of appetite, the table was cleared, and then respread for the benefit of the "huskies," who were brought in to gain their first experience of Christmas fare. A somewhat different assortment was prepared for the visitors, the dishes consisting of milk punch, venison stew, cranberry tart, biscuits, sweets, raisins and coffee. This was certainly a variation to their ordinary food of seal or walrus flesh and water, and they

showed their appreciation of it by leaving no crumbs and sticking to their seats until, at half-past ten, they were gently told that it was time to go home. Then they left, but the next day they came again, and were perhaps not the first who, having enjoyed a hearty Christmas dinner, felt disposed to complain that Christmas can only come once a year.

CHAPTER X

The Search for the Northwest Passage

ARCTIC exploration has had a double purpose, one commercial, the other geographical. The first consisted in efforts to find an available water route north of America or of Europe and Asia, by which the long journey around the southern capes of America and Africa might be avoided and easy intercourse between the East and the West be attained. These long-sought-for channels were known as the Northwest and the Northeast Passages. They have been discovered only in our own days, and their hoped-for commercial utility has proved an illusion, through the almost insuperable difficulties which they present.

The second consisted in efforts to reach the North Pole, and, as supplementary to this supreme triumph, to gain a general idea of the geography of the polar regions. Such were the purposes of Peary and others in their explorations. Both the objects named have led to adventurous voyages, and many important results have been attained, while the romantic and perilous incidents involved have been innumerable.

It may be said here that the earliest voyages of modern navigators in this direction had no definite purposes. What they did was the work of chance. Yet as they resulted in the discovery and settlement of Greenland—the ice-clad island which forms the American gateway to the Pole—some brief mention of them seems here in place.

The voyagers here referred to were the hardy and daring Norsemen, the Viking adventurers who for so many years kept

Europe in dread and turmoil. Direct descendants of these bold navigators are Nansen, one of the leaders in polar research; Amundsen, the first to sail through the Northwest Passage, and Andrée, who daringly ventured in a balloon into the unknown North. These men are of the type of the Vikings of old, who in their single-masted, many-oared galleys dared the storms of the Atlantic, sailing without compass or chart many leagues into the trackless seas.

In the year 860 Noddoddr, one of these reckless mariners, ventured so far from land that he was caught in a gale and blown on the shores of an island in the northern seas, which, from its frozen aspect, he named Iceland. This discovery, more than a thousand years ago, was the first made by European navigators in the Arctic waters. The next came in 876, when a second Viking sailor, driven far beyond Iceland by a storm, saw in the distance the coast of an unknown land, on which, however, he did not land.

Though this discovery was reported to his countrymen, more than a century elapsed before an expedition was made to the unknown land thus seen. Then, about the year 981, Eric the Red, outlawed in Iceland for the then very ordinary offense of killing one of his foes, took to the seas and sailed west in search of this untrodden shore. He reached it in due time, discovered a country still more ice-clad than Iceland, but named it Greenland as an inducement to his countrymen to settle there. The settlement made by Eric existed for some five centuries, and was the basis of the first discovery of America. The continent was first seen in 985 by a vessel blown out of its course by a gale, and in 1000 it was visited by Leif, son of Eric the Red, at a place named by him Vineland (wine-land), but no permanent settlement was made.

This discovery of Greenland is of much interest, since the Danish settlements in that island have been very useful as the basis of modern explorations. The early Norse settlement was abandoned about the period of the discovery of America by Columbus, it being

decimated by the "black plague" and troubled by marauders. But about a century later the island was revisited by Captain John Davis and was claimed by Denmark. The present Danish settlements were founded in 1721, the most northern station (72 degrees 48 minutes north latitude), being Upernavik, a name of frequent occurrence in the stories of Arctic voyages, as a useful starting point into the unknown.

The earliest purpose in view in the prosecution of polar voyages was the commercial one, the discovery of an easy passage through or around the American continent by which commerce with India might be facilitated. The lack of knowledge of the width of the continent led to hopes that a water channel might be found across it to the Pacific, and various rivers were ascended with this end in view, such as the Chickahominy by Captain John Smith and the Hudson by Captain Henry Hudson. Hopes also of finding a practicable passage around the continent on the north were early entertained, and these led to the first Arctic expeditions, those of Frobisher, Davis and others.

England was early in this field, the pioneer expeditions starting from that land. The earliest on record was an expedition said to have been sent out in 1527 by Henry VIII of England for "discoverie even to the North Pole, two faire ships well manned and victualled, having in them divers cunning men to seek strange regions." Its success was small, one of the two ships sent being lost north of Newfoundland, while the other returned to England.

The next expedition that calls for attention was that under Sir Hugh Willoughby, who sailed from England in 1553, "for the discovery of regions, dominions, islands, and places unknown." He set sail with three vessels, the largest being of 160 tons. These crossed the North Sea in company, sighting the coast of Norway about the middle of July. In September they were parted by a storm, two of the ships reaching the coast of Russian Lapland, where it was determined to pass the winter. Here Sir Hugh and

all his companions perished, probably from scurvy. The third ship, under Richard Chancellor, reached the mouth of the Dwina, in the White Sea, and entered the harbor of Archangel. Here the mariners were well treated by the Russians and returned to England in the following summer. Thus ended the first northeast expedition. Its chief result was to open commercial relations between England and Russia.

The first expedition with any notable results was that of Sir Martin Frobisher in 1576 to the northwest. He tells us, in the quaint diction of his day, that, "being persuaded of a new and nearer passage to Cataya (Cathay) than by Capo d'buona Speranza, which the Portugalles yeerly use, began first with himselfe to devise, and then with his friendes to conferre, and layde a playne platte unto them, that that voyage was not only possible by the northwest, but also, as he coulde prove, easie to be performed." It was "the only thing left undone in the world whereby a notable mind might be made famous and fortunate."

Sailing from Deptford with three small barks, he explored the coast of Greenland, discovered the strait now known by his name, and found on its shores a black mineral in which was visible a yellow substance resembling gold. This unlucky find put an end to the main purpose of the expedition, the ships returning to England with some of the illusory substance, which, on examination by London goldsmiths, was pronounced to be gold. The announcement raised high enthusiasm in the country, and a new and large expedition was fitted out and despatched in 1577, returning with an abundance of the black earth. In 1578 it went again and this time brought back a great cargo of the deceptive material. With this the story ends; we hear no more of Arctic gold. The stuff was doubtless tested and found to be what is designated as "fools' gold," but no mention was made of the result, and the record came to a sudden end.

The historian of Frobisher's expedition gave many details of

their experience with the Eskimos, and presents us with a graphic description of these people, one well worth repeating. "They are," he says, "of the color of a ripe olive. They are men very active and nimble. They are a strong people and very warlike, for, in our sight, upon the tops of the hills, they would often muster themselves after the manner of a skirmish, trace their ground very nimbly, and manage their bows and darts with great dexterity. They go clad in coats made of the skins of beasts, as of seals, deer, bears, foxes, and hares. They have also some garments of feathers, being made of the cases of fowls, firmly sewed and compacted together. In summer they use to wear the hair side of their coats outward, and sometimes go naked for too much heat; and in winter, as by signs they have declared, they were four of five fold upon their bodies, with the hair for warmth turned inward. These people are by nature very subtle and sharp-witted, ready to conceive our meaning by signs, and to make answer well to be understood again; and if they have not seen the thing whereof you ask them, they will wink and cover their eyes with their hand, as who would say, it hath been hid from their sight. If they understand you not whereof you asked them, they will stop their ears. They will teach us the name of each thing in their language which we desire to learn, and are apt to learn anything of us. They delight in music above measure, and will keep time and stroke to any tune you shall sing, both with their voice, head, hand, and foot, and will sing the same tune aptly after you. They will row with our oars in our boats, and keep a true stroke with our mariners, and seem to take great delight therein."

Frobisher was quickly followed by another notable navigator, John Davis, who made three voyages between 1585 and 1587 in search of a northwest passage, discovering the strait which bears his name and advancing as far as the 72d degree of north latitude. His remark that he found himself "in a great sea free from ice, neither was there any ice toward the north, but a sea free, large,

and very salt and blue, and of unsearchable depth," added nothing to the discovery of the passage beyond the renewed conviction of that day that the way toward the north was without impediment.

As the discoverer, or pioneer, of the Baffin's Bay route Davis occupies a place of renown among Arctic navigators. On his final voyage he reached the latitude of 72 degrees north, two hundred and fifty miles farther north than any explorer before him had attained, and discovered a little cape which he named Sanderson Hope. It is in the vicinity of the present Danish colony of Upernavik. Confident that he had found the long-sought passage to Cathay (China), he fancied that an open route in that direction lay before him. But he was soon undeceived, finding himself surrounded by huge icebergs, to escape which needed all his skill and seamanship. For three days he sought an outlet, but the great bay was everywhere covered with thick ice, and he was forced to put back, reaching England with his battered and leaking ship on the 15th of September, 1587.

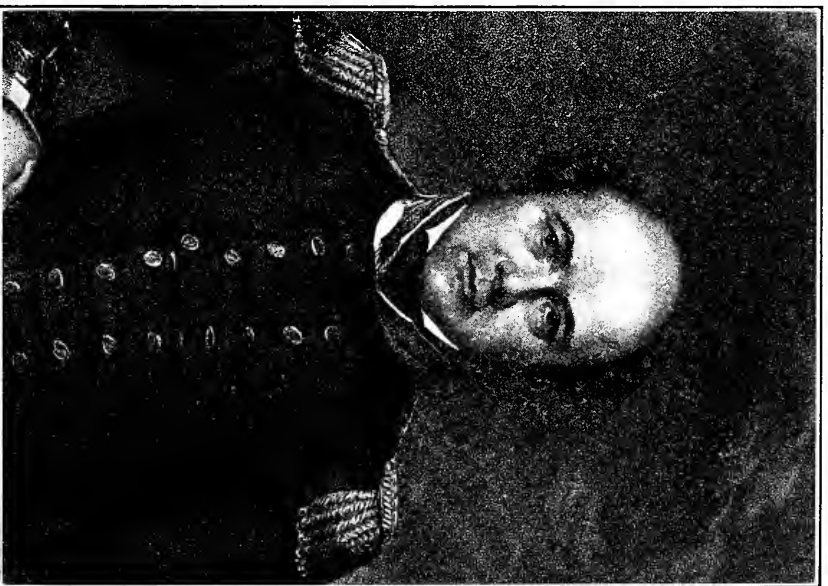
One more expedition was sent out in the sixteenth century, this being a Dutch enterprise under William Barentz, who sailed north in the European seas, reaching a much higher latitude than that gained by Davis. In his first voyage, in 1594, he attained the latitude of 77 degrees 21 minutes, near Cape Nassau, Nova Zembla, and in 1596 reached the higher latitude of 79 degrees 49 minutes, off North Spitzbergen, in the region now known as Barentz Sea.

We have next to deal with an English explorer, but one best known for his exploits in the Dutch service, the famous Henry Hudson. His reputation, indeed, rests mainly upon his discovery of Hudson River and New York Bay, but he also ranks high among Arctic navigators, making in all four voyages to the icy seas, and sailing due north, northeast and northwest. He was the first whose direct purpose was the discovery of the North Pole, and he made a record of high latitude that was not surpassed during the two centuries following.



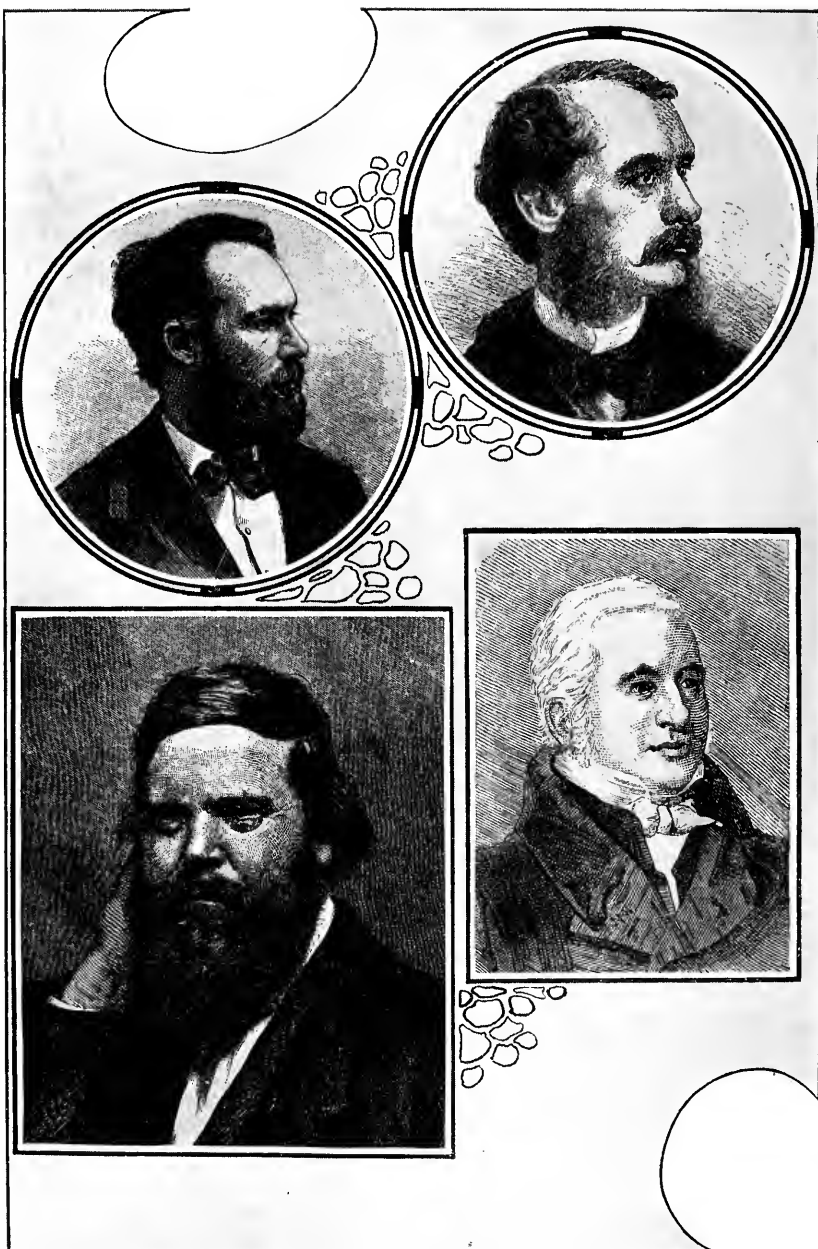
DR. ELISHA KENT KANE

One of the most famous American Arctic Explorers. Born in Philadelphia February 20, 1820, served on the First Grinnell Expedition of 1850, and Commander of the Second Grinnell Expedition in 1853, to search for traces of Sir John Franklin. He discovered the position of the Polar Sea through Smith's Sound.



SIR JOHN FRANKLIN, CAPT. R. N.

The famous English Arctic Explorer. Born 1786. After serving in the British Navy at Trafalgar, and in other engagements, he led three Arctic expeditions, on the last of which, starting 1845, he perished in the winter of 1850-51. The fate of Franklin's Expedition, comprising 135 men, was the object of search of many following Polar Expeditions.



LEADERS OF FAMOUS ARCTIC EXPEDITIONS

Captain George E. Tyson
Captain Charles F. Hall

Dr. Isaac H. Hayes
William Scoresby

His first voyage was made in 1607, under the direction of the Muscovy Company; and the order he received was straightforward and simple in the extreme: "Go direct to the North Pole." And this order he attempted to carry out in a small decked boat, with a crew of ten men and a boy! He steered due north along the shores of Spitzbergen, until he reached latitude 80 degrees 23 minutes; and then, for want of provisions, and owing to the approach of winter, was forced to return. When we consider the perilous character of the navigation of these northern seas, we cannot but marvel as we record that Hudson's little barque arrived safely in the Thames, on the 15th of September.

In the following year he sailed again, but took a northeasterly direction towards Nova Zembla. His ship was somewhat larger, and his crew numbered fourteen men. But he ascended no higher than 75 degrees, and returned to England in August.

His third voyage, in 1609, was made in the Dutch service and led to unintended results. At first he made for the northeast, but being baffled by the ice-drifts, he sailed west, and touched the American coast in the neighborhood of New York Bay. He discovered the noble river which still bears his name and on whose banks the Dutch afterwards established a colony. Among their descendants long flourished strange legends of Hudson and his men. "It was affirmed," says Washington Irving, "that the great Hendrik Hudson, the first discoverer of the river and country, kept a kind of vigil there every twenty years, with his crew of the 'Half-Moon'; being permitted in this way to revisit the scenes of his enterprise, and keep a guardian eye upon the river and the great city called by his name."

In 1610 he made his fourth and last voyage, in a vessel of fifty-eight tons, stored and provisioned for six months. Frobisher Strait was gained on the 1st of June. Then came a desperate struggle against floating ice and contrary winds; but Hudson kept perseveringly to the westward, passed through the strait now known

by his name, reached the extreme point of Labrador, which he called Cape Wolstenholm, and discovered an island-group to the northwest, the southern headland of which he named Cape Dudley Digges. Here a vast sea broadened before his astonished gaze; and the restless waters for the first time rolled and seethed under an English keel.

Into this great bay or sea, Hudson Bay, as it is now known, he sailed for several hundred miles; and winter coming on, he encamped his crew upon Southampton Island, and hauled his ship aground. The hardships he and his men endured were terrible, for they were ill-fitted to contend with an Arctic winter, and had neither sufficient provisions nor stores. Hudson bore the trial uncomplainingly, sustained by a noble enthusiasm; but his followers grew discontented, and then mutinous, and on Hudson's attempting to resume the enterprise at the return of spring, they seized upon him, his son, and several sick sailors, and threw them into an open boat, in which they had previously stowed a fowling-piece, some gunpowder and shot, a small quantity of meal, and an iron pot (June 21, 1611). The castaways were voluntarily joined by John King, the carpenter, who refused to take part in and bear the shame of mutiny, remaining faithful to his captain to the last.

To the last it proved, for Hudson and his companions were never more heard of. They perished miserably in that inland sea or on its barren shores. The ringleader in the mutiny and five of his companions were slain in an encounter with the natives on an island near Cape Digges. Of the remainder, some died of starvation, the survivors managing to carry the ship back to the British Isles. Thus ended in disaster one of the most promising of the early expeditions.

The tidings of the great stretch of open water discovered by Hudson deeply impressed the imagination of the adventurers of his time. It seemed to them that here was the route to Asia which had been so diligently sought. It was not long before others fol-

lowed in his track, the first being Captain Button in 1612, who reached and named Nelson River, at the spot where the Hudson Bay Company founded its first post. He also discovered the Mansfield Islands, in latitude 65 degrees. Two years later a voyage was made by William Baffin and in 1616 one by William Baffin and Robert Bylot, which resulted in the discovery of Whale Sound, Smith Sound, Jones Sound, Lancaster Sound, and Baffin Bay. These were notable additions to the chart of the Arctic World, which British enterprise was gradually defining and filling up; but by Baffin's contemporaries they were discredited. As Mr. Markham observes, the memory of a bold and scientific navigator had to wait many weary years for that full justice which comes at last. It was two centuries before another vessel forced her way into the "North Water" of Baffin Bay, and the great pilot's discoveries were almost forgotten. On maps published as late as 1818, may be seen a circular dotted line to the west of Greenland, with this legend,—"Baffin's Bay, according to the relation of William Baffin in 1616, *but not now believed.*"

The all-important discovery made by Baffin was that of the great channel leading out of his bay in a northerly direction, and opening upon the vast and still unknown region which stretches towards the Pole. He named it after Sir Thomas Smith, the governor, we may almost say the creator, of the East India Company; and a man of great sagacity, liberality, and enterprise. Of this sound Baffin says: "It runneth to the north of 78 degrees, and is admirable in one respect, because in it is the greatest variation of the compass of any part of the world known; for, by divers good observations, I found it to be above five points, or 66 degrees, varied to the westward, so that northeast by east is true north, and so of the rest. Also this sound seemeth to be good for the killing of whales, it being the greatest and largest in all this bay." It is now regarded as affording the only practicable route to the Polar Sea.

Several other voyages, of no great importance, took place

during the remainder of the seventeenth century, but for a century after 1631, when Captain Thomas James made a voyage chiefly notable for its misadventures, the search was abandoned. It was in the service of Russia that it was resumed in 1741, when Vitus Bering, or Behring, a Dane, explored the coast of Kamchatka for the Russian government and sailed into the strait since known by his name. Several other Russian expeditions brought up the work to the opening of the nineteenth century, and two British expeditions worthy of mention took place.

The first was that under Captain J. C. Phipps, sent out by George III, at the instance of the Royal Society of the Admiralty, in 1773, toward the regions north of Spitzbergen. In his "Journal of a Voyage to the North Pole," the captain entered the sea "during a summer affording the fullest examination; but the wall of ice between latitudes 80 and 81 degrees showed for more than twenty degrees not the smallest appearance of any opening." The highest latitude reached was 80 degrees 48 minutes. In this expedition Horatio Nelson, then a boy of fifteen years of age, took part, and exhibited a bravery and cool courage prophetic of his subsequent career.

The other was the famous one of Captain Cook, who was sent to make discoveries in the Pacific and to return to England, if possible, by way of Bering Strait, making a northeast passage. His ships were totally unfit for this purpose, and after exploring the strait and reaching Ivy Cape, he was driven back by the ice and forced to return by the southern route.

It is well here to speak of another expedition, not that it had any special importance, but from the fact that it was the first authentic American attempt and was backed by Benjamin Franklin. Here is a letter from Franklin concerning it:

"PHILADELPHIA, February 28, 1753.

. . . "I believe I have not before told you that I have provided a subscription here of £1500 to fit out a vessel in search of a

northwest passage. She sails in a few days, and is called the 'Argo,' commanded by Mr. Swaine, who was in the last expedition in the 'California,' and author of a Journal of that voyage in two volumes. We think the attempt laudable, whatever may be the success. If she fails, 'magnis tamen excidit ausis.' With great esteem,

"BENJ. FRANKLIN.

"MR. CADWALADER COLDEN, N. Y."

Of this voyage the *Pennsylvania Gazette*, "printed for Benjamin Franklin, postmaster, and D. Hall," November 15, 1753, says:

"Sunday last arrived here the schooner 'Argo,' Captain Charles Swaine, who sailed from this port last spring, on the discovery of a northwest passage. She fell in with ice off Cape Farewell; left the eastern ice and fell in with the western ice, in latitude 58 degrees, and cruised to the northward to latitude 63 degrees, to clear it, but could not; it then extending to the eastward. On her return to the southward, she met with two Danish ships bound to Ball River and Disco, up Davis Straits, who had been in the ice fourteen days off Farewell, and had then stood to westward and assured the commander that the ice was fast to the shore all above Hudson's Straits to the distance of forty degrees out: and that there had not been such a severe winter as the last these twenty-four years that they had used that trade; they had been nine weeks from Copenhagen. The 'Argo,' finding she could not get round the ice, pressed through it and got into the strait's mouth the 26th of June, and made the Island Resolution, but was forced out by vast quantities of driving ice, and got into a clear sea the first of July. On the 14th, cruising the ice for an opening to get in again, she met four sail of Hudson's Bay ships endeavoring to get in, and continued with them till the 19th, when they parted in thick weather, in latitude 62½ degrees, which weather continued until the 7th of August. The Hudson Bay men supposed themselves 40 leagues from the western land.

"The 'Argo' ran down the ice from 63 degrees to 57 degrees 30 minutes, and after repeated attempts to enter the straits in vain, as the season for discovery on the western side of the Bay was over, she went on the Labrador coast, and discovered it perfectly from 56 to 55 degrees, finding no less than six inlets, to the heads of all of which they went, and of which we hear they have made a very good chart, and have a better account of the country, its soil, produce, etc., than has hitherto been published.

"The captain says it is much like Norway, and that there is no communication with Hudson's Bay through Labrador where one has heretofore imagined, a high ridge of mountains running north and south, about fifty leagues within the coast."

Not satisfied with the results of this attempt, Captain Swaine again sailed in the "Argo" the following spring, and the *Pennsylvania Journal and Weekly Advertiser* of Thursday, October 24, 1754, published in Philadelphia, says:

"On Sunday last arrived here the schooner 'Argo,' Captain Swaine, who was fitted out in the spring on the discovery of a northwest passage, but having three of his men killed on the Labrador coast, returned without success."

For the eventual navigation of the Northwest Passage the credit belongs to Captain Roald Amundsen, who succeeded in covering the long-sought route in 1903-1905, as already described.

CHAPTER XI

The Ross and Parry Polar Voyages

INTO the seas containing the goal sought by Peary and Cook in the early years of the twentieth century expeditions, led by daring navigators, pushed in the early nineteenth, the first of these being Captain Scovsby, a successful and adventurous whaler. It was in a whaling voyage that he made his famous northward trip. While lying-to for whales, in 1806, in the seas east of Greenland, the idea entered his mind to make a bold dash toward the Polar Sea, which he believed lay open to the north.

With a boldness and energy rarely equaled he pushed his ship far through the pack ice, succeeding in the end in clearing this formidable barrier and entering "a great openness or sea of water," in which he reached the latitude of 81 degrees 30 minutes, the highest as yet attained. He added largely to our knowledge of the east coast of Greenland and of the phenomena of the Arctic region.

The next to follow was Captain John Ross, in 1818, with two vessels, the "Isabella" and the "Alexander," the latter commanded by Lieutenant William Parry, the man with whom we are here principally concerned. With Captain Ross sailed as a midshipman his nephew, James Ross, also of fame in polar annals. Both these men ended their careers as admirals in the British navy, under the titles of Sir John Ross and Sir James Ross.

This expedition followed the usual Baffin Bay route and in latitude 75 degrees 54 minutes met with a village of Eskimos who had never before seen white men. They curiously queried: "Who are you? Whence came you? Is it from the sun or the moon?"

To these Ross gave the name of Arctic Highlanders, a desig-

nation since then often used. He was the first to discover cliffs covered with seeming red snow; this is now known to be due to the growth in the snow of a minute red lichen. At the farthest point which he reached, Ross was too far south to discern more than the outline of the land near Smith Sound; but he named the bold headlands which guard the entrance to this famous channel after his two ships, *Cape Isabella* and *Cape Alexander*.

Descending the west side of the bay, he found the waters clear of ice, and extremely deep. The land was high, and the range of mountains, in general, free from snow. A noble inlet, fifty miles wide, with cliffs on both sides, now offered itself to view, and the ships entered it on the 29th of August. But they had scarcely accomplished thirty miles when Ross, to the surprise and vexation of his officers, declared that he saw land stretching across the inlet at a distance of eight leagues, and ordered the ships to tack about and return. To this imaginary land he gave the name of *Croker Mountains*. Parry, on the other hand, was of opinion that this great inlet, now recognized as the *Lancaster Sound* of *Baffin*, was no land-locked bay, but a strait opening out to the westward; and on the return of the two ships to England he openly declared this opinion. The English public supported the energetic Parry; and, after a vigorous wordy warfare, the government resolved to place him in charge of the "*Hecla*" bomb-ship and the "*Griper*" gun-brig, with which he sailed for the north on the 5th of May, 1819.

On the 15th of June Parry came in sight of *Cape Farewell*, and sailed on up *Davis Strait* and *Baffin Bay* as far as 73 degrees north latitude, where he found himself hemmed in by masses of ice. On the 25th, however, a way opened up, and Parry pushed forward, boldly and energetically, until he reached *Lancaster Sound*. Here he was on the ground made familiar by the expedition of the preceding year, and was soon to determine whether Ross' supposed mountains had any real existence. "It is more easy to imagine than describe," says Parry, "the almost breathless anxiety which

was now visible in every countenance, while, as the breeze increased to a fresh gale, we ran quickly up the sound."

As they advanced, the "Croker Mountains" disappeared into thin air, and Parry proceeded as far as the mouth of a great inlet, which he named Barrow Strait. Entering this, he sailed onward to Prince Regent Inlet, which, with various capes, bays and islands, he named and surveyed. On approaching the magnetic (not the actual) north pole, he found his compasses rendered almost useless by the "dip" or "variation" of the needle. Great was then the excitement on board the two ships; the excitement increased to enthusiasm when, on September 4th, after crossing the meridian of 113 degrees west longitude, Parry announced to his men that they had earned the government grant of £5,000. This was offered to the navigator who should penetrate to the meridian of 110 degrees west, within the Arctic Circle.

Two weeks later, they were beset by the ice, and in the Hecla and Griper Bay, on Melville Island, Parry resolved to pass the winter. In the following year, the thaw did not set in until July, and it was August before Parry released his ships. Then he started for home, and on arriving in England, about the middle of November, 1820, was received with a hearty welcome.

His success led to his appointment to the command of another expedition in 1821. His ships, the "Hecla" and "Fury," were equipped with every appliance that scientific ingenuity could suggest or unlimited resources provide. They sailed from the Nore on the 8th of May; they returned to the Shetland Isles on the 10th of October, 1823. In the interval—seven-and-twenty months—Parry and Lyon (his lieutenant) discovered the Duke of York Bay, numerous inlets on the northeast coast of the American mainland, Winter Island, the islands of Annatook and Ooght, Hecla and Fury Strait, Melville Peninsula, and Cockburn Island. A glance at the map will show the reader how far to the westward these discoveries carried the boundary of the known region.

While encamped on Winter Island, the English were visited by a party of Eskimos, whose settlement they visited in turn. There they found a group of five snow-huts, with canoes, sledges, dogs, and above sixty men, women and children, as regularly and to all appearance as permanently fixed as if they had occupied the same spot the whole winter. The astonishment with which the English surveyed the exterior aspects of this little village was not diminished by their admission into the interior of the huts composing it. Each was constructed entirely of snow and ice. After creeping through two low passages, having each its arched doorway, the strangers found themselves in a small circular apartment, of which the roof formed a perfect arched dome. From this central apartment three doorways, also arched, and of larger dimensions than the outward ones, opened into as many inhabited apartments, one on each side, and the third opposite the entrance. Here the women were seated on their beds, against the wall, each having her little fire-place or lamp, with all her domestic utensils, about her. The children quickly crept behind their mothers; the dogs slunk into the corners in dismay.

The construction of the inhabited part of the hut was similar to that of the outer apartment, being a dome, formed by separate blocks of snow laid with great regularity and no small ingenuity, each being cut into the shape requisite to build up a substantial arch, from seven to eight feet high in the center, and with no other support than this principle of building supplies. Sufficient light was admitted by a circular window of ice, neatly fitted into the roof of each apartment.

In 1824 Parry went north again in connection with a series of expeditions sent out by the British government. He was to explore Prince Regent Inlet, and the others were to investigate the northern lands of the continent, with the purpose of obtaining a knowledge of their configuration. One of the latter was under the command of the afterwards famous Sir John Franklin.

Parry, with his ships, the "Hecla" and "Fury," soon reached Lancaster Sound, the goal of his former voyage. But here the ice imprisoned his vessels and he was forced to spend the winter at Port Bowen. With the spring came new misadventures. Vast masses of ice pressed upon the "Fury," driving her ashore and crushing her so that she became useless. Parry, therefore, was obliged to remove her men and stores to the "Hecla" and set sail for England, being in no condition for a further advance.

In 1827 the indefatigable Parry started with an expedition for the north shore of Spitzbergen. It was characterized by his daring attempt to cross the pack-ice in light boats and sledges; the former being used in the water-ways and pools, the latter in traveling over the frozen plains. Nothing but the strongest enthusiasm could have rendered this enterprise possible. It was the first attempt of the kind, though later experience proved that it was the only available one. When the explorers arrived at a gap in the ice, they launched their boats and embarked. On reaching the opposite side they landed, and by sheer force hauled up the boats; a laborious process, occupying much time, and making such demands on the men's strength that only eight miles were accomplished in five days. They could not travel except by night, on account of the glare of the snow, which threatened them with blindness. Breakfasting soon after sunset, they labored for some hours; then made their chief meal; and towards sunrise halted, lighted their pipes, wrapped themselves up in their furs, and laid down to rest.

The reader must not suppose that the ice-fields of the Polar regions are as smooth and level as the frozen surface of an English river. They are intersected by "lanes" or "leads" of water, and broken up by rugged hummocks of ice, which can be crossed only with extreme difficulty. In spite of every obstacle, Parry pressed on, ambitious to reach the eighty-third parallel of latitude. But at last he became aware of the startling circumstance that, faster than he moved forward, the ice was carrying him backward; in other

words, it was slowly drifting southward beneath his feet, and bearing him and his party along with it. To struggle against an adverse Nature was hopeless. In latitude 82 degrees 45 minutes he gave up the struggle; for, though they had traveled nearly three hundred miles over the rugged ice and through frozen water, they had advanced no more than one hundred and seventy-two miles from the "Hecla." Parry's trouble in this instance has been experienced by other polar navigators since his time, the ice of the polar seas being in almost continual motion. But he had won the honor of making the highest point north yet reached, and which was not equalled until fifty years afterwards. With this success the gallant Parry closed his polar record.

Parry's successful voyage was quickly followed by one commanded by Captain Ross, his 1818 associate, who went north again in 1829. Steam navigation had now been introduced and this voyage was made in a steamship, the "Victory," the first of her kind to navigate the Arctic seas. The "Victory" made her way into Prince Regent Inlet; found the wreck of the "Fury" on the 12th of August; and on the 15th reached Parry's farthest point. Thence she accomplished three hundred miles along a previously unexplored coast; and on the 7th of October went into winter quarters in what is now called Felix Harbor. There Ross was held fast by the ice for eleven months. In September, 1830, he once more got under way, but, after sailing for about three miles, was again caught in the pack-ice, and shut up until August, 1831. On this occasion the "Victory" accomplished *four* miles, and on the 27th of September was imprisoned for another winter; having thus achieved exactly seven miles in two years.

In 1831, James Ross, who had again accompanied his uncle, made a sledge excursion to the westward, and crowned himself with glory by reaching and fixing the magnetic north pole in latitude 70 degrees 5 minutes 17 seconds north, and longitude 96 degrees 46 minutes 45 seconds west. This is the point at which the

magnet points vertically downward, indicating that it marks the extremity of the earth's magnetic axis. Why it does not coincide with the geographical pole no one knows, but its discovery was in its way as important as that of the latter in 1909.

The long imprisonment in the ice had by this time seriously affected the health of the crew; and as there was no chance of releasing the ship, Ross determined to abandon her, and effect his escape from the polar solitudes in boats and sledges. He made first for the wreck of Parry's ship, the "Fury," in order to avail himself of what remained of her stores and materials; and after a terrible journey reached it, but so spent and broken down that farther progress was impossible. Here he wintered; the whole party undergoing the most fearful sufferings, and several dying. With the first warm days of the summer of 1833 their hopes revived. They resumed their perilous adventure; and on the 15th of August gained the open sea, and took to their boats. At midnight they passed Edwin Bay and next morning reached the farthest point to which they had advanced in the preceding year. Finding an open "water-lane," they kept to the northward, and in the evening were tossing off the northeastern point of the American continent. On the 17th great was their joy to see before them the ample expanse of Barrow Strait; and with a favorable wind they now steered to the south, passing Cape York and Admiralty Inlet, and on the 25th reaching the eastern shore of Navy Board Inlet.

At four o'clock on the following morning the lookout man announced that a ship was in sight; but as the breeze was blowing freshly, she bore away under all sail, leaving them behind. Fortunately a dead calm succeeded, and by dint of hard rowing our explorers approached so near that their signals were descried, when the ship heaved to and lowered a boat, which made directly towards them. The mate in command asked them if they were in distress, and offered assistance, adding that he belonged to the "Isabella," of Hull, once commanded by Captain Ross, but then by Captain

Humphreys. He was with difficulty convinced that his former commander stood before him,—declaring that it was all a mistake, for he had certainly been dead two years. When finally satisfied, he hastened back to his ship with the glad tidings, and immediately her yards were manned, and three ringing cheers greeted the captain and his party.

As soon as possible Captain Humphreys steered for England, and on the 12th of October reached Stromness in Orkney. The intelligence of the rescue so happily accomplished quickly spread thence throughout the kingdom; and Captain Ross and his companions were received as men who had risen from the grave. On his landing at Hull he was welcomed by enthusiastic crowds, like a general fresh from the field of victory. He fully deserved the reception thus accorded to him.

CHAPTER XII

The First Franklin Expedition

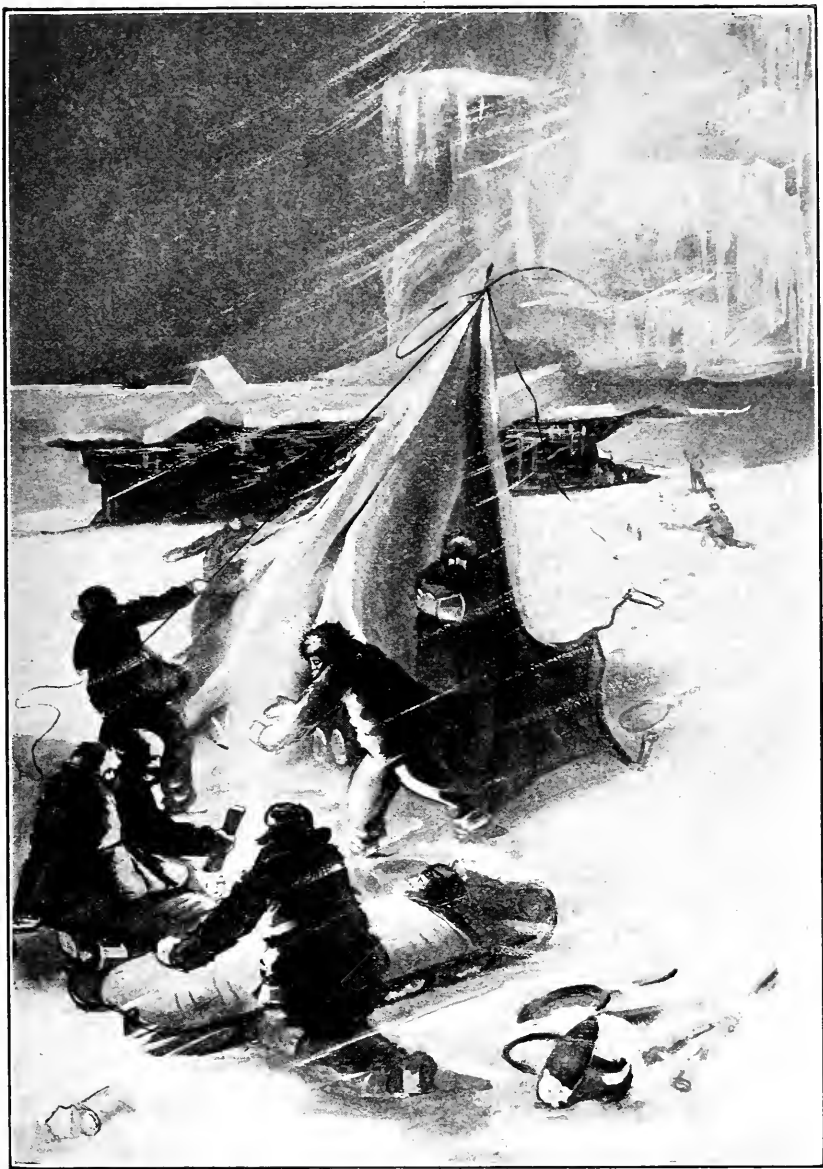
JOHN FRANKLIN, the afterwards famous Sir John Franklin, was born at Spilsby, in Lincolnshire, England, in 1786, one of a family of ten. His father intended him for the clergy, but as the boy grew older his disposition seemed to unfit him decidedly for this profession. He was a restless lad, with the spirit of the rover born in him, and manifested early in life a strong predilection for the sea, Admiral Nelson being the idol of his heart, while he read with avidity all the books he could obtain dealing with sea life and adventure. Living not far from the coast, the scent of salt water filled his nostrils, and the sight of the open sea was familiar to his eyes.

These influences and the romantic yarns spun to him by any old sailor he chanced upon exerted over him the spell which was to mould his later life. The long stretch of moving water, which rolled between him and the sky-line, was the home of all that was wonderful and glorious; the ships which sailed over it were, to his enthusiastic mind, floating homes of mystery, adventure and beauty. Beyond the sea lay the lands where the coco-palms grew, where Indians hunted and fought, and where roamed mighty beasts of strange and fantastic shapes. Over the sea, also, lay the realms of ice and snow, of which more marvelous tales were told than of the golden islands of the Southern Seas. As a result a great yearning came upon him. The life on shore, in peaceful, steady-going Lincolnshire, was too dreary and hopeless; nowhere could he be happy save on that boundless ocean, with room to breathe, and surrounded by all the glamour of romance.

The elder Franklin probably looked upon all this as a boyish whim, and wisely fancied that the best way to cure it would be to let the ardent lad have a taste of a sailor's life, thinking that the rough fare and hard work which it involved would cure him of his desire and make him welcome the quiet career proposed for him. He therefore arranged for him to make a voyage in a trading vessel to Lisbon and back. His scheme had not the desired result. The boy came back fuller of the desire to be a sailor than before. As a consequence his father obtained a place for him in the Royal Navy, and he had the happiness to serve under his supreme hero Nelson, at the battle of Copenhagen. He also served under Nelson with distinction in the battle of Trafalgar, and was present at the battle of New Orleans in 1815, where he received a slight wound.

Franklin's first Arctic experience came in 1818, when he had reached the rank of lieutenant and was second in command of an expedition sent out to find a way through Bering Straits. Two vessels formed the expedition—the "*Dorothea*," 370 tons, under Captain Buchan, and the "*Trent*," 250 tons, under Lieutenant Franklin, the latter carrying a crew of ten officers and twenty-eight men. Their instructions were to sail due north, from a point between Greenland and Spitzbergen, making their way, if possible, through Bering Straits. The ships, which would to-day rank only as small coasting craft, were soon imprisoned in the ice and so severely crushed that as soon as the winter passed and escape was possible they were turned towards home. The practical results of the expedition were valueless, and only one circumstance in connection with it saved it from being a failure. This was the introduction of Franklin to that sphere of work which, during the remainder of his life, he was so brilliantly to adorn.

In the following year (1819) Franklin left Gravesend in a merchant ship of the Hudson Bay Company, his purpose being to explore the northern coast of America in co-operation with Parry, who, as already stated, was despatched to Lancaster Sound. The



RESCUE OF THE GREELY PARTY, JUNE 23, 1884

Three years after the start of his expedition Greely and his men, encamped near Cape Sabine, Grinnell Land, had been reduced to the direst extremities. By June 21, 1884, death had decimated their numbers, and the commander himself was so weak that he discontinued his journal. The next day Frederick and Brainard obtained some water, and this, with a few square inches of soaked seal skin was all the food the men had for the ensuing forty-two hours. When vitality was at its lowest ebb, and hope was nearly gone, Greely heard the whistle of the "Thetis" blown by order of Captain Winfield S. Schley, who had been sent to search for Greely and the Lady Franklin Bay Expedition.

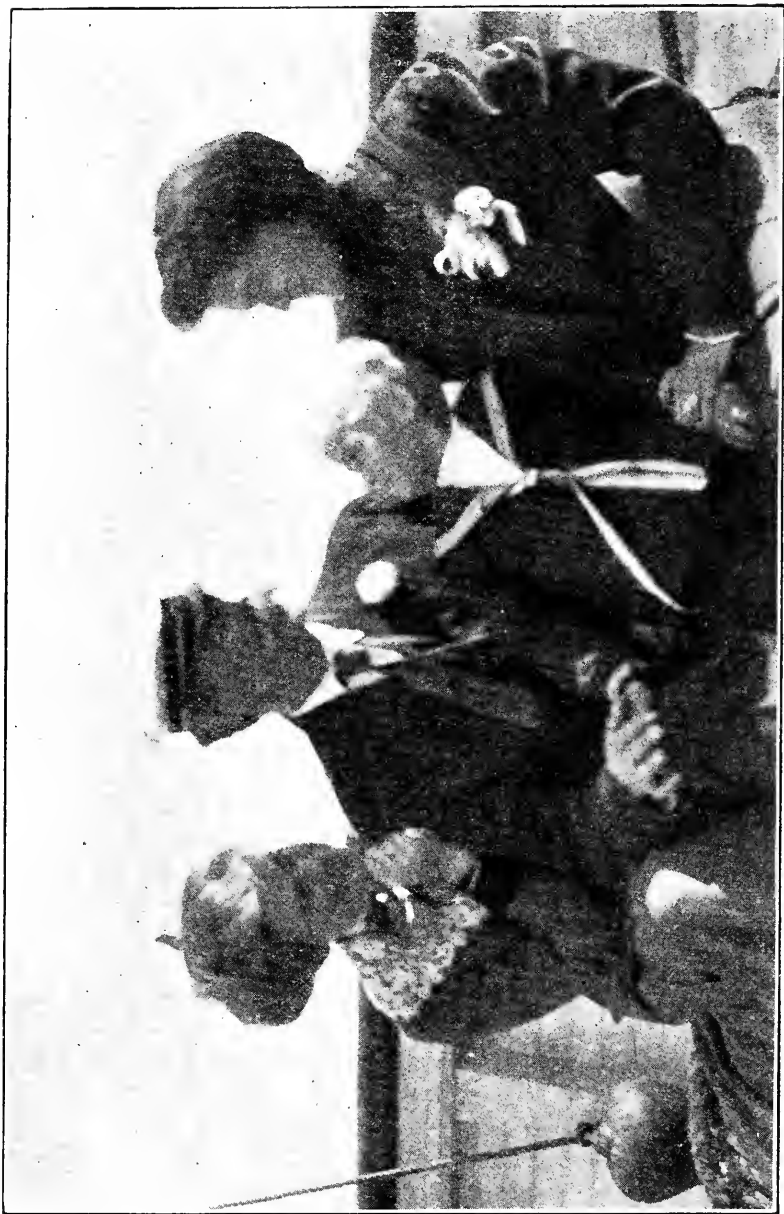


Photo by Pictorial News Co. New York.

THE REUNITED PEARY FAMILY ON BOARD "THE ROOSEVELT"

Commander Peary's first thought after his successful expedition to the North Pole was to rejoin his family as quickly as possible. Although intensely fond of family life, the exacting demands of the career to which he had set himself had kept him away from sight or communication with his loved ones most of his married life. On returning from the North Pole he announced that he would in future remain at home to enjoy the companionship of his wife and children which fate had denied him for so many years. The members of this interesting group reading from left to right are: Miss Marie Peary, the explorer's daughter, who was born within the Arctic Circle; Commander Peary, Robert E. Peary, Jr., and Mrs. Peary.

outcome of Parry's voyage we have told; that of Franklin's journey may be briefly stated. At that time the whole northern coast of the continent had been explored at two points only, the mouth of the Coppermine and Mackenzie Rivers, and it was desired to gain a wider knowledge of this unknown region.

With Dr. Richardson as naturalist, Midshipman Hood and Back, and a few men from the Orkneys, Franklin reached his starting point, York Factory, on Hudson Bay, August 13, 1819. Thence, by a journey of seven hundred miles, the party reached Fort Cumberland, wintering the first year on the Saskatchewan. Another year was passed in the wilderness of northern Canada and a second winter weathered through in "the barren grounds." In the following summer it was proposed to descend the Coppermine to the Arctic Sea, and a journey marked by terrible suffering and hardship began.

Fort Enterprise, the camp occupied during their second winter, stood on a gentle ascent, at the base of which slept the frozen current of Waite River. Here the explorers employed themselves in killing reindeer, and in preparing with their fat and flesh that dried, salted and pounded comestible called pemmican. About one hundred and eighty animals were killed. But even this number did not furnish an adequate supply for Franklin's party; and as the expected stores of tobacco, ammunition and blankets did not arrive, Mr. Back, with some Indian and Canadian attendants, returned to Chipewyan for them. Having obtained them, he once more rejoined the party at Fort Enterprise—after an absence of five months and a journey of 1,104 miles, "in snowshoes, and with no other covering at night in the woods than a blanket and deerskin."

It was the middle of June, 1821, before the ice broke up in the Coppermine River. Then Franklin began his journey, passing down the stream in light birch-canoes, and occasionally pausing to hunt the reindeer, musk-oxen and wolves which frequented its banks. Having reached the mouth of the river, the twenty adventurers now composing the expedition launched their barks upon the Polar

Sea, which they found almost tideless, and comparatively free from ice.

The extreme westward point at which, after many perilous experiences, Franklin arrived, was situated in latitude 68 degrees 30 minutes, and he appropriately named it Point Turnagain. Between this headland on the east and Cape Barrow on the west, a deep gulf opens inland as far south as the Arctic Circle. It was found to be studded with numerous islands, and indented with sounds affording excellent harbors, all of them supplied with small rivers of fresh water, abounding with salmon, trout and other fish. The survey of George IV's Coronation Gulf—to adopt Franklin's barbarous nomenclature—being completed, the explorers prepared to return to Fort Enterprise. The overland part of the journey was attended with the most terrible hardships. They suffered from the combined afflictions of cold, hunger and fatigue. They were so reduced in bodily strength that it was with difficulty they could drag along their languid limbs; and when at last within forty miles of their winter asylum, they found themselves at their last ration. No food, no shelter and the severity of an Arctic winter pressing upon them! Mr. Back, with three of the stoutest Canadians, gallantly started forward to seek assistance; and were followed in a few days by Franklin and seven of the party—leaving the weakest, under the care of Dr. Richardson and Mr. Hood, to proceed at leisure. Four of Franklin's companions, however, soon gave up the attempt from absolute physical incapacity. One of these—Michel, an Iroquois—returned to Dr. Richardson; the others were never again heard of. Franklin pushed forward, living on berries and a lichen called *tripe-de-roche*, and reached the hut; but it was without an inhabitant, without stores and blocked up by snow. Here he and his three companions lingered for seventeen days, with no other food than the bones and skin of the deer which had been killed the preceding winter, boiled down into a kind of soup. On October 29th Dr. Richardson and John Hepburn, one of the seamen, made their appearance.

Dr. Richardson had a tragic tale to unfold. He stated that for the first two days after Franklin's departure his party had nothing to eat. On the third day Michel arrived with a hare and partridge, which afforded each a small morsel. The fourth day they fasted. On the 11th Michel offered them some flesh, which he declared to be part of a wolf; but they afterwards had good reason to suspect it was the flesh of one of the unfortunate men who had left Franklin to return to Richardson. They noticed that Michel daily grew more furtive and insolent, and were convinced that he had a supply of meat for his own use. On the 20th, while Hepburn was felling wood, he heard the report of a gun, and, turning quickly round, saw Michel dart into the tent. Mr. Hood was found dead; a ball had penetrated the back of his skull: there could not be the shadow of a doubt that Michel had fired it. He now grew more suspicious and impatient of control than ever; and as he was stronger than any other of the party, and well-armed, they arrived at the conviction that their safety depended upon his death. "I determined," said Dr. Richardson, "as I was thoroughly convinced of the necessity of such a dreadful act, to take the whole responsibility upon myself; and immediately upon Michel's coming up I put an end to his life by shooting him through the head."

They occupied six days in traveling twenty-four miles, existing on lichens and pieces of Mr. Hood's skin cloak. On the evening of the 29th they came in sight of the fort, and at first felt inexpressible pleasure on seeing the smoke issue from the chimney. But the absence of any footprints in the snow filled their hearts with sad forebodings, which were fully realized when they entered the hut and saw the wretchedness that reigned there.

The exploring party was now reduced to four—Franklin,¹ Richardson, Hepburn and an Indian; and that these could long survive seemed impossible, from their absolute weakness and lack of food. Happily, on the 7th of November three Indians arrived, whom Mr. Back had despatched from Chipewyan with supplies;

and they tended the sufferers carefully until all were strong enough to return to the English settlement. And in this way was accomplished a journey of 5,500 miles; mostly over a bleak and barren country and under an inclement sky, with terrible cost of physical and mental suffering and with much loss of life, but with results which greatly enlarged the boundaries of geographical knowledge.

In a second land expedition, made in conjunction with Parry's voyage of 1824, Franklin discarded the Mackenzie and traced the coast line through 37 degrees of longitude to near the one hundred and fiftieth meridian. The English government, appreciating the services of one who, through great danger and suffering, had carried these expeditions over nine thousand miles, and added to the charts twelve hundred miles of the northern coast line, knighted him in 1829. He also received the honorary degree of D.C.L. from the University of Oxford, was awarded the great gold medal from the French Geographical Society, and was elected a member of the Academy of Sciences, Paris.

As governor of Tasmania, 1836-43, he accomplished much for the advancement of the colony,—among other benefits founding the Royal Society of Tasmania at Hobart Town, the meetings of which were held in the Government-house, and the papers printed at his expense. By a singular coincidence, among the Antarctic expeditions visiting the colony he had occasion to welcome the "Erebus" and "Terror," the ships which he was afterwards to command in the final and fatal expedition of his life.

CHAPTER XIII

The Terrible Fate of the Sir John Franklin Expedition

THE records of polar expeditions are full of tales of disaster, suffering and death, at times sudden, at times drawn out through the long and slow agony of starvation. While the later explorers, such as Nansen, Peary, Cook and others experienced the pangs of hunger in only a minor degree, some of those of earlier date passed through long-drawn sufferings of the most terrible description. We may instance the cases of the Greely and DeLong expeditions, and above all that of Sir John Franklin, the mystery surrounding which enveloped it in a romantic interest, which was greatly added to by the results of the many relief expeditions sent out and the years that passed before the fearful fate of the unfortunates became known. In the romance of polar research—the romance of terror—the tale of Sir John Franklin's final expedition stands first, and a detailed account of it comes here in order.

On Franklin's return to England from his governorship of Van Diemen's Land, in 1844, he found the Admiralty exercised on the subject of a new Arctic expedition, proposed by the Royal Society at the instance of Sir John Barrow. He claimed the command, and was appointed. On this occasion the first lord of the admiralty said to Sir Edward Parry, of former Arctic fame, "I see that Franklin is sixty years of age; ought we to permit him to go out?" to which Parry replied, "He is the ablest man I know, and if you do not send him he will certainly die of despair."

Franklin himself said, when asked, "Can you not repose on the

laurels won in such good service for your country," "My lord, I am but fifty-nine." "He appeared," says La Roquette, "as jealous of a few months of his age, when it was a question of exposure to great danger, or of executing a work of difficulty or suffering, as a woman would be of being thought older than the parish register showed."

The prestige of Arctic service, and of his brilliant experience in that field, brought around him a crowd of volunteers for the new expedition, which set out under the best auspices and with ardent hopes of a brilliant and successful voyage. Franklin's experience had previously been along the northern coast line of the American continent. Now he proposed to traverse the islanded seas bordering that coast, with the purpose of discovering that famed Northwest Passage which so many navigators of the past centuries had sought in vain. Daring mariners had fought their way far through the channels and passages of that region, and there was reason to hope that Franklin, with his superior equipment, and his use of the charts made by former voyagers from Frobisher down, would succeed where so many had failed.

The ships chosen were the 370-ton screw steamer "Erebus" and the 340-ton "Terror," vessels which had already made a record in the Antarctic region and whose good fortune, it was trusted, would follow them into the Arctic. These were the vessels which had borne Sir James Ross and his party in his memorable Antarctic exploration of 1839-43, when he reached the seventy-eighth degree of south latitude and discovered an ice-bound region of continental extent, which he named Victoria Land and traced its coast for seven hundred miles. These vessels, the "Erebus" under Sir John Franklin and the "Terror" under Captain Crozier, both carefully refitted and provisioned for three years, sailed from the Thames in the spring of 1845.

The officers and men were one hundred and thirty-four in number, a transport ship accompanied the expedition to carry stores

to Disco, Greenland. The "Erebus" and "Terror" were fitted with every appliance then considered essential to success, though much of the provisions taken proved later to be of a quality detrimental to the success of the expedition. Such was the party and the equipment which started out with the warmest anticipations of a glorious and fortunate voyage, only to plunge into the depths of that terrible sea of ice from which no man of the party was ever to return.

On the 8th of June they left the Orkneys, steering for the extreme point of Greenland known as Cape Farewell; where, indeed, the adventurer does, as it were, bid farewell to the security and liberty of the civilized world. A month later they lay at anchor in the middle of a group of rocky islets on the east side of Baffin Bay. Yet another fortnight, and we may see them with the mind's eye, as some whalers saw them, gallantly struggling with the ice which impeded their progress across the Bay of Baffin to Lancaster Sound. Seven officers manned a boat and dragged her across the ice to visit the whalers. They went on board the "Prince of Wales" of Hull. "All well," they reported, and expressed the blithest, cheeriest confidence in the success of their enterprise. After a hearty hand-grasp, they said good-bye and returned to their ships. On the same evening (July 26th) the ice broke up, the westward route lay open, and the Arctic expedition plowed the waves for Lancaster Sound. Thereafter a cloud descended upon it; it passed into the heart of the grim solitudes of the Polar World, and men heard of it no more. When two years had elapsed without any tidings of the expedition reaching England, the public mind grew seriously alarmed. Expectation deepened into anxiety; anxiety darkened into fear. When the winter of 1848 passed away, and still no tidings came, it was felt that further inaction would be intolerable. Hitherto the great object had been the discovery of the Northwest Passage; now the thoughts of men were all directed to a search after Franklin and his companions. Strangely enough, Providence had so ordered it that in the search after these "martyrs of Science" the former object was attained.

An expedition in search of the missing heroes was despatched under Sir James Ross; and another under Sir John Richardson: both added to the stores of geographical knowledge, but nothing more. These had worked from the eastward; Captains Moore and Kellett worked from the westward, entering Bering Strait, and actually reaching, by their boats, the mouth of Mackenzie River. In the spring of 1849, the British Government offered a reward of £20,000 to any private explorers, of any nation, who should discover and succor the wanderers; and Lady Franklin, out of her own resources, organized several relieving parties. So it happened that, in 1850, no fewer than twelve vessels, led by Ross, Rae, McClure, Osborne, Collinson, Penny, Austin, Ommaney, Forsyth and De Haven, besides boat and sledge companies, plunged deep into the far northern wilderness to trace the footprints of the lost.

The Admiralty orders to Franklin had been, to pass through Lancaster Sound into Barrow Strait; thence to Cape Walker; and from Cape Walker, by such course as he might find convenient, to Bering Strait. The general opinion was, that he had got to the west of Melville Island, and then been caught by the ice among the numerous islands lying in that part of the Arctic Sea. And it was supposed that he would be engaged in an effort to cross the ice, and reach either one of the Hudson Bay settlements, or some whaling-station.

In August of the year named the first traces of the missing party were found. These consisted of scraps of rope and canvas, a long-handled rake, the ground plan of a tent, etc., found by Captain Penny on Beechey Island. In conjunction with Lieutenant De Haven, of the American Grinnell expedition, he now undertook a careful search in the vicinity of Wellington Channel, with the result that they found a carefully built pyramidal cairn. It was constructed of meat-cans which were filled with gravel and sand and arranged to taper upwards from the base to the summit, where was fixed the remnant of a broken boarding-pike. But no record could

be found; nothing to connect it with Sir John Franklin. Presently, as they looked along the northern slope of the island, other strange objects caught their eye. Another rush of eager, breathless beings, and all stood in silence before three graves. Some of them were unable to refrain from tears as they muttered the words inscribed upon the rude tablets, "EREBUS AND TERROR."

During the succeeding years various other expeditions were sent out, but nothing of importance was found until the expedition of Captain McClintock of 1857-59. McClintock had served under Sir James Ross in his Franklin search expedition of 1848-49, and in later attempts, in which he performed remarkable feats in sledge traveling. In 1857 he was chosen to command the expedition sent out by Lady Franklin for a final effort to obtain tidings of the lost navigator. In the winter of 1858-59 he and his officers made extensive sledge journeys, and in May, 1859, found at Point Victory, on King William's Island, a record of Franklin's death and the remains of the last survivor of his party. For his success he was knighted and received various honors and rewards.

The finding of this paper and the expedition itself were the result of the last of Lady Franklin's various efforts to discover the fate of her husband. To this object she had dedicated all her available means, and, aided by sympathizing friends, had purchased and fitted out the "Fox," in which McClintock sailed. The paper was found by Lieutenant Hobson, enclosed in a tin cylinder, in a cairn twelve miles from Cape Herschel, and, with a large number of relics obtained at this and other points, it was deposited in the Museum of the United Service Institution, Whitehall Yard. The discovery of this paper first definitely made known the fate of the party,—an issue generally apprehended in England from the time of Rae's discoveries in 1854, for the relics which in that year he had brought from the Eskimos were articles of personal property of the officers, including Sir John Franklin's own star of the Order of Merit.

We may briefly refer to two other search expeditions headed

by Americans. One of these was headed by Captain C. F. Hall, who reached King William's Land in 1866 and obtained from the Eskimos of that region a variety of interesting relics of the Franklin party. He also learned from them that their people had been, at one time, alongside of "the ships," and had seen the great Eshemutta (Franklin). "This Eshemutta was an old man with broad shoulders, gray hair, full face, and bald head. He was always wearing something over his eyes,"—"spectacles," as they described them. "He was quite lame and sick when they last saw him. He was always very kind, wanted them to eat constantly, very cheerful and laughing; everybody liked him, Innuits and all on the ship; they on the ship would always do what he said. The ship was crushed by the ice. While it was sinking, the men worked for their lives, but before they could get much out from the vessel she sank. For this reason Aglook (Captain Crozier) died of starvation, for he could not get provisions to carry with him on his land journey."

Hall returned to King William's Land in 1869, and on this occasion also obtained a considerable number of relics of the Franklin party from the natives, saying that such relics were "possessed by natives all over the Arctic regions from Powel's Bay to Mackenzie River."

The final search expedition was made by Lieutenant Frederick Schwatka, of the American Army, who obtained leave of absence in 1878 to command a Franklin search expedition in the Arctic Ocean. King William's Land was reached and searched, the principal result being the discovery and burial of the skeletons of various members of the Franklin party. Many relics were found, but the papers of which the Eskimos had spoken, and which were believed to contain the more important records of the party, had disappeared. Eskimos had taken them from the cairn in which they were deposited and, being deemed of no value, had suffered them to be destroyed.

One important find made by Schwatka was the remains of a skeleton near which was found a silver medal bearing the words,

"Awarded to John Irving, Midsummer, 1830. Second Mathematical Prize." This identified the remains as being those of Lieutenant Irving, of the "Terror." As this was the only case of possible identification, the remains were carefully gathered and conveyed to New York, whence they were forwarded to Edinburgh, Irving's native town. Here they were given a public funeral on January 7, 1881.

Coming now to what we know of the voyage of the last party and what we can reasonably conjecture by piecing out the information obtained and weaving it into a consecutive narrative, we may present the following account as probably representing the general facts:

When the "Erebus" and "Terror" parted company, on July 4, 1845, with the despatch-boat that had accompanied them, they shaped their course through Baffin's Bay towards Lancaster Sound. Continuing their way, they passed Cape Warrender and ultimately reached Beechey Island at the entrance of the then unexplored waters of Wellington Channel. They passed through the channel, taking such observations as were necessary as they went, until they had progressed one hundred and fifty miles. Further advance being stopped by the ice, they passed into another unexplored channel between Cornwallis Island and Bathurst Island which led them into Barrow's Strait, nearly one hundred miles west of the entrance to Wellington Channel.

The ice was now forming thickly around them, and attention was directed to discovering a comfortable haven where they could remain while the winter ice closed in around them. A suitable harbor was found on the northeasterly side of Beechey Island and the ships were made snug. All the spars that could be sent down were lowered on to the decks, and the rigging and sails stowed away below before the ice surrounded them, so that when the floes began to pack and lifted the hulls of the vessels, there should be no "top-hamper" to list them over. On the frozen shore huts were built for

the accommodation of shore parties, and, as the ice spread around and the snow fell, the men found exercise and amusement in heaping it up against the sides of the vessels as an extra protection against the cold, a thick mass of frozen snow. But where there were fires always going to maintain the temperature of the cabins, the danger of an outbreak of fire had to be zealously guarded against. With all the ship's pumps rendered useless by the frost, and the water frozen solid all around, a conflagration on board a vessel in the Arctic seas is one of the grimmest of terrors. The safeguard is the maintenance, in the ice near the vessel's side, of a "fire hole," that is, a small space kept open by constant attention down to the level of unfrozen water.

During the long winter months there was plenty of time to estimate the progress they had made, and there must have been considerable satisfaction on all sides at what they had accomplished. They had circumnavigated Cornwallis Island and had reached to within 250 miles of the western end of the passage.

New Year's Day was saddened by the death of one of their comrades, and the silent ice-fields witnessed another impressive sight when the crews of both vessels slowly marched ashore to the grave dug in the frozen soil of Beechey Island. The body, wrapped in a Union Jack, was borne by the deceased man's messmates, the members of his watch headed by their officers following, and after them the remainder of the officers and crew. The bells of each ship tolled as the *cortège* passed over the ice, the crunching of the crisp snow under foot being the only other sound till the grave was reached. There the solemn and impressive service of a sailor's funeral was said, the mingled voices as they repeated the responses passing as a great hum through the still, cold air. A momentary silence followed as the flag-swathed figure was lowered into the grave, and then a quick rattle of firearms as the last salute was paid echoed far and wide among the icebergs.

Twice more was that scene repeated before the ships cleared

from the ice, and one of the first signs discovered by the searchers after Franklin were the three headstones raised on that lonely isle to the memory of W. Braine, John Hartwell, and John Torrington, who died while the ships were wintering in the cold season of 1845-6.

By July the ice had broken up and the voyage was resumed and passed without any exceptional incident, up to the middle of September, 1846, when they were again caught by the ice, but 150 miles nearer their destination than the year before. Only a hundred miles more to be sailed over and they would be conquerors—but that hundred miles was too firmly blocked with ice-floes for them ever to sail over.

The winter of 1846-7 was passed off the most extreme northerly point of King William's Land. The ice was particularly heavy, and hemmed the vessels in completely, the surface being too rugged and uneven to permit of traveling in the immediate vicinity even of hunting parties. This was the more unfortunate because the provisions were growing scant, and supplies brought in by hunters would have been of great assistance. At the time of starting, the vessels had been provisioned for three years. Two had now passed, so that only a twelvemonth's stock of food remained in the holds. It might take them all the next summer to work through the remaining hundred miles of the passage, and that would leave them another winter to face, unless they should find open water when they reached the end. But, on the other hand, they might not be able to get through in the time, or the passage might not be navigable. Either possibility was full of very grave anxiety for those in command, for it was a terrible prospect of being left, with one hundred and thirty men to feed, in the midst of the frozen sea, "a hundred miles from everywhere."

The anxiety felt was shown by the despatch, as early as May, or two months before the first flush of summer was due, of a specially selected party of quick travelers to push forward over the

ice and spy out the prospects ahead. Lieutenant Graham Gore, of the "Erebus," commanded the party, which consisted of Charles des Voeux, ship's mate, and six seamen. They carried only enough stores to last them on their journey, and each one had to contribute his share to the labor of hauling the hand-sledges over the jagged ridges of broken ice. Skirting along the coast of King William's Land, they arrived at a point from the top of which they were able to discern the mainland coast trending away to the horizon, with a sea of ice in front.

To commemorate the fact the little party built a cairn upon the summit of the point, which they named Point Victory, and enclosed in a tin canister they deposited, under the cairn, a record of their trip and its result. Twelve years later this record was found, and by it the honor due to Franklin for the discovery of the passage was confirmed. But the manner of its finding must be told later on.

The record left by them stated that all the crews were then well and Sir John Franklin in command. They returned to find that he was sick unto death, their gallant leader dying shortly after, on June 11, 1847. Death served him well in one particular, it saved him from the terrible experience of those he left behind.

Captain Crozier, of the "Terror," assumed command, but it was as the leader of an almost hopeless enterprise. The ice did not break up, as was hoped, and the two vessels, with their inadequate supplies, were held fast for another winter,—the winter of 1847-8,—during which no fewer than nine officers and fifteen men died. On the 22d of April, the survivors came to the resolution of abandoning the doomed ships; and, one hundred and five in number, and led by Captains Crozier and Fitzjames, they started for Great Fish River. The great quantity of articles left at the point of departure is a significant evidence of their enfeebled condition. We can only conjecture the events of their journey. From this spot to a point about half-way between Point Victory and Point Herschel nothing important concerning them has been discovered; and the skeletons

and relics found were all deeply embedded in snow. At the half-way point just spoken of, however, Lieutenant Hobson, in his search, caught sight of a piece of wood projecting from the snow; and on digging round it exhumed a boat, standing on a very heavy sledge. Within it were two skeletons: one, lying in the bottom of the stern-sheets, and covered with a quantity of clothing; the other, half-erect in the bows, as if the poor fellow had crept there to look out, and in that position had yielded to the slumber which knows no waking. A couple of guns, loaded and ready cocked, stood close at hand, apparently prepared for use against wild animals. Around this boat was found another accumulation of cast-off articles; and McClintock conjectured that the party who had dragged the sledge thus far were *returning to the ships*, having discovered themselves unequal to the terrors of the journey they had undertaken. This is possible; but we can hardly doubt that the stronger portion of the crews pushed forward with another boat, and that some reached Montreal Island and ascended Great Fish River. The record left by them in the cairn which Lieutenant Gore had erected tells their story to this point, ending with, "Start to-morrow, April 26th, for Back's Fish River."

In 1854, Dr. Rae, in his overland expedition, fell in with some Eskimos who spoke of having seen forty men dragging a boat near the Fish River, under the leadership of a tall, stout, middle-aged man; a description fairly agreeing with the appearance of Captain Fitzjames. Sherard Osborn is of opinion, therefore, that the strongest of the survivors, under Fitzjames, pushed on to perish in the dreary wildernesses of the Hudson Bay territory (for relics have been found on the Fish River, fifty miles above Montreal Island); and that the weak, if ever they reached the ships again, did so only in time to see them wrecked by the breaking up of the ice in the autumn of 1848. We know from the Eskimos that one ship sank; and that the other, on board of which was one dead person, "a tall, large-boned man," was driven ashore. These wrecks, however,

could not have occurred on the coast between Capes Victory and Herschel; for in that case the natives would assuredly have appropriated the relics discovered by McClintock and Hobson. We come, therefore, to McClintock's conclusion, that the wrecked ship went ashore somewhere within the region frequented by the Fish River Eskimos; and that in the years 1857-58 the ice had probably swept her away again, and finally destroyed her.

Let the reader remember, as a commentary on the vanity of human wishes, that the point at which the "Erebus" and "Terror" were caught in the ice in 1846, was but ninety miles from the point reached by Dease and Simpson in their boats in 1838-39. So that had Franklin and his followers but accomplished those ninety miles of open water, they would have won the prize for which they had dared and endured so much, and have returned home to enjoy the well-earned applause of their countrymen. But Providence had decreed otherwise. "They were to discover," says the historian of their labors, "the great highway between the Pacific and Atlantic. It was given them to win for their country a discovery for which she had risked her sons and lavishly spent her wealth through many centuries; but they were to die in accomplishing their last great earthly task; and, still more strange, but for the energy and devotion of the wife of their chief and leader, it would in all probability never have been known that they were indeed the first discoverers of the Northwest Passage."

We have not completed our story. Closely connected with it is another record of adventure, that of the solution of the problem of the Northwest Passage by the actual fact of passing through it. As this was accomplished by one of the searchers for the Franklin relics, the relation of it properly fits in with the story of the search. The feat was performed by Captain Robert McClure, partly on shipboard and partly by sledging, in 1853. His voyage was one of leading importance, in view of its result, and merits description here.



DR. FRIDTJOF NANSEN

The celebrated Northern explorer, whose voyage in the "Fram" brought him world-wide fame.



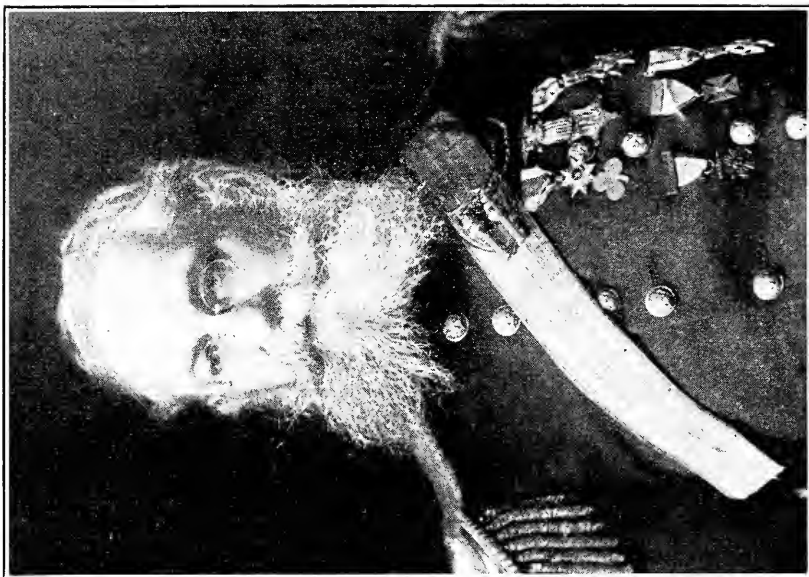
THE DUKE OF THE ABRUZZI

His Royal Highness, Luigi Amedeo, cousin of the King of Italy, who brought fame upon himself and his country by his daring attempt to reach the North Pole.



REAR-ADMIRAL WINFIELD S. SCHLEY

An American Arctic explorer who went to the relief of the Greely Expedition.



GENERAL A. W. GREELY

One of the most celebrated of living American Arctic explorers.

The "Investigator," McClure's ship, had sailed in 1850 with several others for the Bering Strait entrance to the Polar Sea. Here they parted company to work over different areas, the "Investigator" sailing along the waters bathing the northern coast of the continent. She was soon in front of the ice pack, which stretched with an unbroken form from east to west, all that could be seen in the distance being a great herd of walrus huddled together on the ice like a flock of sheep. Open water was found, however, between the ice and the land, and the ship was pushed into this lead, McClure keeping well in towards the shore on the lookout for natives. At Cape Bathurst, near the Mackenzie River, a region which Franklin had explored in his land trip of many years before, a large tribe was observed, and at once a boat party put off from the ship.

As they approached the shore, thirty tents and nine winter-houses were seen. Immediately the boats were run ashore a tremendous stir was caused in the village, the men running to and fro and then charging down a steep slope to where the boats were aground on the beach. As they drew near it was seen that each man carried a drawn knife in his hand, as well as bows and arrows, and their warlike intentions were still more clearly shown when they fitted arrows to the bows and began to aim at the white men. The interpreter Miertsching, clad in native costume, advanced from the explorers towards the angry Eskimo, holding his hands above his head in the position which expresses peace amongst these primitive people.

When told that no harm would be done them they were persuaded to lay aside their bows and arrows, but would not relinquish their knives until the whites had put down their rifles. Amity was reached when one of the rifles was given to the chief to carry, the Eskimos now offering their knives to the safe keeping of the visitors. It was a hunting village that had been reached, containing more than three hundred men, women, and children. They told the whites that the ice beyond the open passage was the realm of the

white bear, which roamed there in numbers and of which they were in great fear, telling several tales of its ferocity.

Upon the interpreter explaining how the white men's rifles could kill the bears, the chief at once invited him to come and live with them, offering as inducements his own daughter, a pleasant-looking girl of about fifteen, a fully furnished tent, and all the other necessary possessions of a well-to-do Eskimo. Failing in that, they invited the explorers to a feast of roast whale and venison, salmon, blubber, and other delicacies; but instead of taking these, the explorers presented them with a number of gifts, and left them on the best of terms.

A few days later another small band was encountered farther along the coast, one of whom was wearing a brass button in his ear. The button was off a sailor's jacket, and upon being asked how he obtained it, the man replied it had been taken from a white man who had been killed by the tribe. He was asked for further particulars, in case the unfortunate might turn out to be one of Franklin's men. The Eskimo replied that it might have been done a year ago or when he was a child, but the huts the white men had built were still standing. The explorers at once persuaded him to take them to the spot, but on arrival they found the huts so weather-worn and overgrown with moss that more than a generation must have passed since they were built.

Winter was now setting in, and as there was no suitable harbor at hand, Captain McClure determined to pass the season amongst the ice-floes. His decision was largely due to the fact that as the ice was forming around them, a great mass of old ice, over six miles in length and drifting at the rate of two miles an hour, came upon them. Its enormous weight crushed everything out of its way, and the ship could only manœuvre sufficiently to graze it with her starboard bow. Fortunately on the other side of her there was only freshly formed and comparatively thin ice, otherwise she would have been hopelessly crushed at once. As it was, the gradual drifting past of the mass was disconcerting, and it was decided to make

fast to it. A great mass which they ascertained extended downwards for forty-eight feet below the surface of the sea was selected, and with heavy cables the "Investigator" was made secure to it. Throughout the winter she remained moored to it, though not without more than one experience of danger.

These experiences were repeated at the breaking of the ice on the coming of spring, the "Investigator" drifting towards a shoal upon which a huge mass of ice was stranded. For a time the ship was in imminent danger of being crushed, a peak of ice thirty feet high hanging perpendicularly above her and threatening each moment to fall. Fortunately the suspense was relieved by a mass falling from the great bulk in another direction, while the pressure on the floe carried it away from the ship. Later on the "Investigator" was in peril of being caught between the grounded mass and the moving floe, in which case she would inevitably have been crushed. A blast of powder, which cracked the ice, relieved the strain, and the vessel escaped without serious injury, though several sheets of her copper sheathing were stripped off and rolled up like scraps of paper. Progress, however, was slow, the only open water being near the land, beyond which the pack ice was heavy and close.

They rounded Cape Lambton on Banks' Land, a promontory which they found rose a thousand feet precipitously. The land beyond gradually lost the bold character of the rugged cape, the island presenting a view of hills in the interior which gradually sloped to the shore, having fine valleys and extensive plains, over and through which several small and one considerable sized stream flowed. A great deal of drift-wood lay along the beach, and the land was covered with verdure upon which large flocks of geese were feeding, while ducks were flying in great numbers. Two small islands were passed off the coast, one of which afforded an example of the force exerted by a drifting Polar Sea ice-floe. The island rose about forty feet above the surface of the sea, and broken masses of ice, which had formed a floe, had been driven entirely over it.

The pack still presented an impassable barrier to their course away from the land, and as the season was getting late they decided that they would make winter quarters. A suitable bay was found on the north of the island, and there they spent, not one, but two winters, for the ice remained so thick during the ensuing short summer that it was impossible to move. In the summer, however, if they could not get to sea, they could travel on to the land, and as game was plentiful they were able to keep themselves well supplied with fresh meat. But when winter again came upon them with its cold darkness, the game was scarcer, and, what was worse, the ship's stores were decreasing, so that it became necessary to reduce the rations that the stores might be made to last as long as possible, since another year might need to be passed in the ice.

The ship was little the worse for the straining she had received, but some of the men were showing signs of sickness, and Captain McClure decided to send out a party of the more robust to travel overland to the nearest station of the Hudson Bay Company, and thence press on to England with a request for a relief expedition. Everything was ready for this journey when, on April 10th, an incident happened which rendered it unnecessary.

On that day the captain and first lieutenant were walking on the ice near the ship discussing the serious state of affairs and depressed by the fact that one of the men had just died from scurvy, while others were in a bad state of health. As they walked onward they saw a man coming towards them over the ice. He was hastening so fast that they thought he must be flying from a bear, and they went forward to meet him. But as they approached him, they saw that he was not one of their own ship's company, for he was of a different build to any of their men, in addition to which his face showed black from between his furs, and he was waving his arms wildly. They stopped, doubtful what to make of him, and he rushed up, still gesticulating and articulating wildly.

"Who are you, and where do you come from?" McClure exclaimed.

"Lieutenant Pim, of the 'Resolute,' Captain Kellett," the strange figure managed to reply, as he seized McClure's hands and shook them frantically.

The story told by Pim was the following: In the winter of 1851-52 McClure had made a journey across the ice to Melville Island and left a record at Parry's winter harbor. To this island the "Resolute," entering by way of Baffin Bay, came in the following year and found McClure's record, learning from it where the "Investigator" might be found. Accordingly, Lieutenant Pim was sent across the straits with a sledge party on March 10th. For a month they had been wandering in search, and he happened to be on ahead of his men when he caught sight of the "Investigator" in the distance. He had pushed on to his expected goal, when he saw and recognized Captain McClure. His excitement overmastered him and he could only halloo and shout and jump about in his glee.

The noise of his shouts reached the vessel, where the crew, hearing a strange voice, came tumbling up from below to see who it was that had arrived. The sight of the "Resolute" sledge-party, who soon afterwards came up, completed their surprise and gratification, for it meant that close at hand was all the help they needed to insure their liberation. The whole ship's company journeyed across to where the "Resolute" lay, and, in the interchange of yarns and the assurance of abundance of food and rest till the ice broke up, they found the requisite stimulus to overcome all the evil effects of their past trials and privations.

The remainder of Captain McClure's adventure may be briefly told. The "Investigator" was abandoned, as in hopeless straits, and her captain and crew wintered on the "Resolute," which was obliged to remain in the pack until the following year. In the spring of 1854 a remarkable journey was made. Captain Collinson, of the "Enterprise," who had parted with McClure at Bering Strait four years earlier, remained like him in the ice, having come within a few miles of Point Victory, where the record of the Franklin party was afterwards found.

Several expeditions were sent out from the "Resolute" in the spring, one of which, under Meham, made a most remarkable journey, in the hope of discovering the locality of Captain Collinson. In sixty-one and a half days of travel he journeyed 1,336 miles, his average speed on his return trip being $23\frac{1}{2}$ miles a day, a record of interest in view of the recent controversy concerning the possible speed of Arctic travel. During that year Collinson got out of the ice and brought the "Enterprise" back to England.

McClure and his men returned on the "Resolute" by way of Baffin Bay. They had thus not only found, but traversed, the Northwest Passage, though not in the same ship, and partly by traveling over the ice. The carrying of a ship through this passage was reserved for Amundsen, fifty years later. For his great feat McClure received the honor of knighthood, while Parliament voted him and his officers and men a reward of £10,000. He had succeeded in a quest which began with Frobisher, nearly three centuries before.

CHAPTER XIV

Dr. Kane's Famous Arctic Voyage

THE search for the Sir John Franklin expedition was not confined to Englishmen. Americans shared strongly in the sympathy that in time grew world-wide, and a wealthy ship-owner of New York, Henry Grinnell, fitted out a series of expeditions with the object of joining in the search. One of these, that of Dr. Kane, won a place among the most famous of polar expeditions. The first American voyage for Arctic research, financed by Grinnell, was under the command of Lieutenant Edwin J. De Haven, a Philadelphian who had served for years in the navy and had taken part in the celebrated Wilkes expedition to the Antarctic seas. Picked out by Grinnell as the best man he could find for the purpose, he took with him a physician, Dr. Elisha Kent Kane, who was afterwards to achieve distinction as a polar explorer for himself.

De Haven left New York May 24, 1850, with two small sailing vessels, the "Advance," of 140 tons, and the "Rescue," of but 90. The tiny submarine "Plunger" has a displacement of 168 tons, and the torpedo-boats of our navy average 200, so that it can be imagined with what frail cockleshells De Haven ventured into the frozen North. As might have been expected, the ice-pack proved an insurmountable obstacle to his little boats. They got no further than the mouth of Wellington Channel, whence they drifted through Lancaster Sound and down the western shore of Baffin's Bay, a distance of more than a thousand miles. They did not shake themselves free from the enclogging ice until the 16th of June, 1851, when De Haven returned to New York.

The second Grinnell expedition, which left New York two years later, was under the command of Dr. Kane, also a native of Philadelphia and a graduate of the Medical School of the University of Pennsylvania in the class of 1842.

The Kane expedition sailed from New York on May 30, 1853, in Mr. Grinnell's brig, the "Advance," one of those used by De Haven, the total party consisting of eighteen officers and men. Dr. Hayes, of later Arctic fame, was the surgeon, August Sonntag the astronomer, and Henry Brooks the first officer. On the 1st of July they reached Fiskernæs, a Danish settlement on the west coast of Greenland, to take on board fifty dogs and an Eskimo driver. By the end of July the little brig was among the floes in Melville Bay, and with the wind blowing half a gale the intrepid voyager made his vessel fast to a huge iceberg. As with its strange convoy the ship approached Cape York, the great ice mountain began to crack and shower down small fragments on the deck, the mariners cast off, and no sooner had they done so than the whole face of the berg gave way and a mighty crystal avalanche slid into the sea where the vessel had been moored only a short time before.

On the 1st of August the ship was moored to another large berg, "a moving breakwater of gigantic proportions," and under its floating lead they moved steadily to the north. Finally, the danger from drifting ice being passed, they got under way, sailing to the northwest through a fairly open channel, over a sea lit with the glory of the midnight sun, the ice-fields glittering with jeweled radiance and presenting the hues of blazing carbuncles, rubies, and molten gold.

As they faced northward, fresh meat for the dogs became almost impossible to obtain. The famished animals eagerly devoured two birds' nests with the contents, and a dead whale provided a series of luxurious banquets for the poor brutes.

On Littleton Island Dr. Kane determined to establish his first depot of stores, for use on the return voyage. The life-boat was

loaded with provisions, blankets, and other articles, and then buried. Along her gunwale were placed the heaviest rocks the men could handle; and after the interstices had been filled up with smaller stones and sods of andromeda and moss, sand and water were poured among the layers. All this, frozen at once into a solid mass, would be hard enough, it was hoped, to resist the claws of the Polar bear.

Continuing his adventurous course, he passed through the drifting ice to some distance beyond Cape Lifeboat Cove and took shelter in a beautiful little bay, landlocked from east to west, and accessible only from the north, which he named Refuge Harbor. It was some time before the ice broke up sufficiently to permit of his effecting his escape; and even after he had once more got out into the channel, he had a daily fight with bergs and floes. At one time, while anchored off a rocky island which he called "Godsend Ledge," a perfect hurricane came on; and though he had three hawsers out, they snapped one after the other, like mere threads, and the "Advance" drifted to and fro at the mercy of the "wild ice." His only hope of safety lay in mooring close to a berg; and this effected, the brig was towed along by a gigantic courser—"the spray dashing over his windward flanks, and his forehead plowing up the lesser ice as if in scorn." Drifting masses, broken up and hurtled together by a tremendous storm, threatened them with destruction; and the explorers were thankful when, on the 22d, the gale abated, and they carried their little vessel into comparatively smooth water, sheltered by the ice-belt which lined the rocky and mountainous coast.

Having secured a haven of safety for the "Advance," Dr. Kane resolved to make a personal inspection of the coast, in order to select a convenient winter-station from which he might start on his sledge-journeys in the following spring. For this purpose he had caused his best and lightest whale-boat to be fitted with a canvas cover, that rendered it not less comfortable than a tent. A supply of pemmican was packed in small cases, and a sledge taken to pieces stowed away

under the thwarts. The boat's crew consisted of Brooks, Bonsall, McGary, Sonntag, Riley, Blake, and Morton. Each man had buffalo-robcs for his sleeping gear, carried a girdle full of woolen socks to keep them dry by the warmth of the body, and slung a tin cup and a sheath-knife to his belt. A soup-pot and lamp for the mess, and a single extra day suit as common property, completed the outfit.

Such were the difficulties of the route, consisting of waterways, gullies and hummocks, that it took them five days to advance forty miles, at the end of which they were forced to abandon the sledge and proceed on foot. Their journey led to an open bay, due, as he found, to a rushing stream, about three-quarters of a mile wide, flowing, as was afterwards observed, from a melting glacier.

Here, in the heart of the dreary snowscape, the travelers met with an Arctic flower-growth, of considerable variety of form and color. The infiltration of the melted snows fed its roots, and the reverberation of the sun's heat from the rocks fostered its delicate life. Amid festuca and other tufted grasses, brightened the purple *lychnis* and sparkled the white stem of the chickweed; together with a graceful *hesperis*, reminding the wanderers of the fragrant wallflower of our old English gardens.

After fording the river, Dr. Kane climbed a lofty headland, the view from which was most impressive. It extended beyond the eightieth parallel of north latitude. Far off on the left lay the western shore of the sound, receding towards the dim, misty north. To the right a rolling country led on to a low, dusky, wall-like ridge, which he afterwards recognized as the Great Humboldt Glacier; and still beyond this, reaching northward from the north-northeast, lay the land which now bears the honored name of Washington—its most projecting headland, Cape Andrew Jackson, bearing about fourteen degrees from the farthest hill on the opposite side, Cape John Barrow. All between was one vast sheet of ice. Close along its shore, almost looking down upon it from the crest of their lofty station,

the explorers could see the long lines of hummocks dividing the floes like the trenches of a beleaguered city. Farther out, a stream of icebergs, increasing in numbers towards the north, presented an almost impenetrable barrier; but beyond these the ice seemed less obstructed and obstructive, and patches of open water glimmered on the distant horizon.

On their return to the brig preparations were made for the coming winter, which it was decided to pass in the secure haven they had reached, since known as Rensselaer Harbor. By the 10th of September the thermometer had fallen to 14 degrees Fahrenheit and the ice-floes had been welded into a compact mass by newly-formed ice. About sixty paces north of the ship an iceberg had been caught in the toils and remained as their gigantic neighbor as long as they occupied that harbor. The long winter passed slowly enough, with what alleviations they could find in their contracted quarters and with such labor as seemed necessary in preparation for the coming spring.

The first traces of returning light were observed at noon on the 21st of January, when a tint of orange lighted up, very briefly, the southern horizon. Necessarily, the influence of the long and intense darkness was very depressing, and was felt even by the lower animals, many of the dogs dying from "a mental disease," clearly due to the absence of light. The symptoms of this disease were very peculiar, and deserve to be indicated. The more material functions of the poor creatures went on, it would appear, without interruption,—they ate voraciously, retained their strength, and slept soundly. But, otherwise, they acted as if suffering from lunacy. They barked frenziedly at nothing, and walked in straight and curved lines with anxious and unwearying perseverance. They fawned on their masters, but without seeming conscious of the caresses lavished upon them in return. Their most intelligent actions seemed automatic; sometimes they clawed you, as if seeking to burrow into your seal-skins; sometimes they remained for hours

in moody silence, and then started off howling as if pursued and ran up and down for hours.

A terrible adventure lay before the explorers. On the 20th of March a party was sent out to establish a depot of provisions, and Kane and the rest of his followers waited only for their return to begin the transit of the bay. Late at night on the 31st, they were working cheerfully by the glare of their lamps, when a sudden noise of steps was heard above, and immediately afterwards Sorintag, Ohlsen, and Petersen came down into the cabin. If there was something startling in their unexpected arrival, much more startling was their appearance. They were swollen, haggard, and scarcely able to speak.

Where were their companions? Behind in the ice,—Brooks, Baker, Wilson, and Pierre—all frozen and disabled; and they themselves had risked their lives to carry the pitiful news. Where were their comrades lying? With cold white lips they muttered that they could not tell; somewhere in among the hummocks to the north and east; the snow was drifting round them heavily when they parted. "Irish Tom" had gallantly remained to feed and care for them, but of their recovery there was little hope. It was useless to put additional questions; the men were too exhausted to be able to rally their ideas.

A rescue party was quickly organized and set out on the trail of the lost explorers, Ohlsen being taken with them on a sledge as a guide to the locality in which they had been left. Finally they were obliged to leave their tent, cache their pemmican, except a small allowance for each, and proceed through a temperature of nearly —50 degrees.

It was indispensable, then, that they should move on as rapidly as possible, looking for traces as they went. Yet when the men were ordered to spread themselves, so as to multiply the chances, though they all obeyed heartily, some painful impress of solitary danger kept them closing up continually into a single group. The strange

manner in which some of them were affected must be attributed as much to shattered nerves as to the direct influence of the cold. Men like McGary and Bonsall, who had stood out the severest marches, were seized with trembling fits and short breath; and, in spite of all his efforts to keep up an example of sound bearing, Kane fainted twice on the snow.

"We had been nearly eighteen hours out without water or food, when a new hope cheered us. I think it was Hans, our Eskimo hunter, who thought he saw a broad sledge-track. The drift had nearly effaced it, and we were some of us doubtful at first whether it was not one of those accidental rifts which the gales make in the surface-snow. But as we traced it on to the deep snow among the hummocks, we were led to footsteps; and, following these with religious care, we at last came in sight of a small American flag fluttering from a hummock, and lower down a little masonic banner hanging from a tent-pole hardly above the drift. It was the camp of our disabled comrades. We reached it after an unbroken march of twenty-one hours."

They found the little tent almost buried in the snow. When Dr. Kane came up, his men, who had outstripped him, were standing in silent file on each side of it. With a delicacy of feeling which is almost characteristic of sailors, and seems instinctive to them, they expressed a desire that he should enter alone. As he crawled beneath the tent-curtain, and, coming upon the darkness, heard before him the burst of welcome gladness that came from the poor prostrate creatures within, and then for the first time the cheer without, his weakness and gratitude almost overcame him. "They had expected him," was their exclamation; "they were sure he would come!"

The return was made with all the haste available. Nothing was carried but what was indispensable, everything else being abandoned. A great part of the track lay among a succession of hummocks, fifteen or twenty feet high and too steep to be ascended.

The sledge had to pursue a winding course around these obstacles, frequently driving through gaps filled with recently-fallen snow, which hid the fissures and openings in the ice beneath. These, says Kane, were fearful traps to disengage a limb from, for every man was painfully aware that a fracture or even a sprain might cost him his life. In addition, the sledge was top-heavy with its load, which weighed not less than 1100 pounds, while the maimed men could not bear to be lashed down tight enough to secure them against falling off.

Yet, for the six hours, the progress of this undaunted band was cheering. They advanced nearly a mile an hour, and reached the new floes before they were absolutely weary. "Our sledge," says Kane, "sustained the trial admirably. Ohlsen, restored by hope, walked steadily at the leading belt of the sledge lines; and I began to feel certain of reaching our half-way station of the day before, where we had left our tent. But we were still nine miles from it, when, almost without premonition, we all became aware of an alarming failure of our energies."

Bonsall and Morton, two of the most robust of the party, besought permission to sleep. They declared that they did not feel cold, and that all they wanted was a little repose. Presently Hans was found frozen almost into rigidity under a drift; and Thomas, standing erect, had his eyes closed, and could scarcely articulate. Soon afterwards, John Blake threw himself on the snow, and refused to rise. They made no complaint of feeling cold; but it was in vain that Dr. Kane "wrestled, boxed, ran, argued, jeered, or reprimanded;" he found that an immediate halt was unavoidable.

We must condense the remainder of this story of Arctic terrors. The tent was at length reached and found in good condition, though a bear had overturned it and made havoc to some extent with its contents. After several hours of sleep they set out once more, in good spirits considering the circumstances. Yet their hard labors soon told on them again. As they grew weaker and weaker, their

halts necessarily became more frequent; and they would fall, in a semi-somnolent condition, on the snow. Strange to say, these brief intervals of slumber proved refreshing, so that Dr. Kane was induced to try the experiment in his own person, taking care that Riley should arouse him at the end of three minutes. Afterwards he timed the men in the same way. They sat upon the runners of the sledge, and fell asleep immediately, but were startled into wakefulness the moment their three minutes had elapsed.

At eight in the evening the wayfarers were clear of the floes, and gained some new hope at the sight of the well-known Pinnacly Berg. Brandy, which sometimes proves an invaluable resource in emergencies, had already been administered in tablespoonful doses. After a final and stronger dram, and a longer rest, they resolved on a last effort to reach the brig, which they attained at one hour after noon.

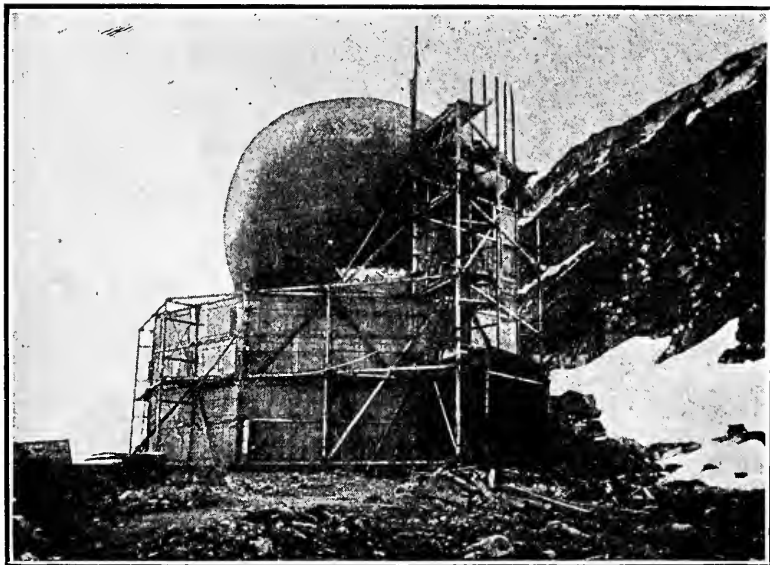
But words are inadequate to describe their sufferings in this last stage of their journey. They were completely delirious, and no longer entertained any clear apprehension of what was transpiring. Like men in a dream they staggered onward, blindly, uncertainly. From an inspection of their footprints afterwards, it was seen that they had steered a bee-line for the brig, guided by a kind of instinct, for they remembered nothing of their course.

When about two miles from the brig they were met by Petersen and Whipple, with the dog-traces, and a supply of restoratives, for which Kane had sent a message in advance by Bonsall. As soon as the frozen, wayworn creatures were safe on board, Dr. Hayes took them under his charge. All were suffering from brain-symptoms, functional not organic, and to be rectified by rest and abundant diet. Ohlsen was for some time afflicted with blindness and strabismus; two others underwent amputation of parts of the foot, but without dangerous consequences; and two died, in spite of every attention. The rescue-party had traveled between eighty and ninety miles, dragging a heavy sledge for most of the distance. They had been

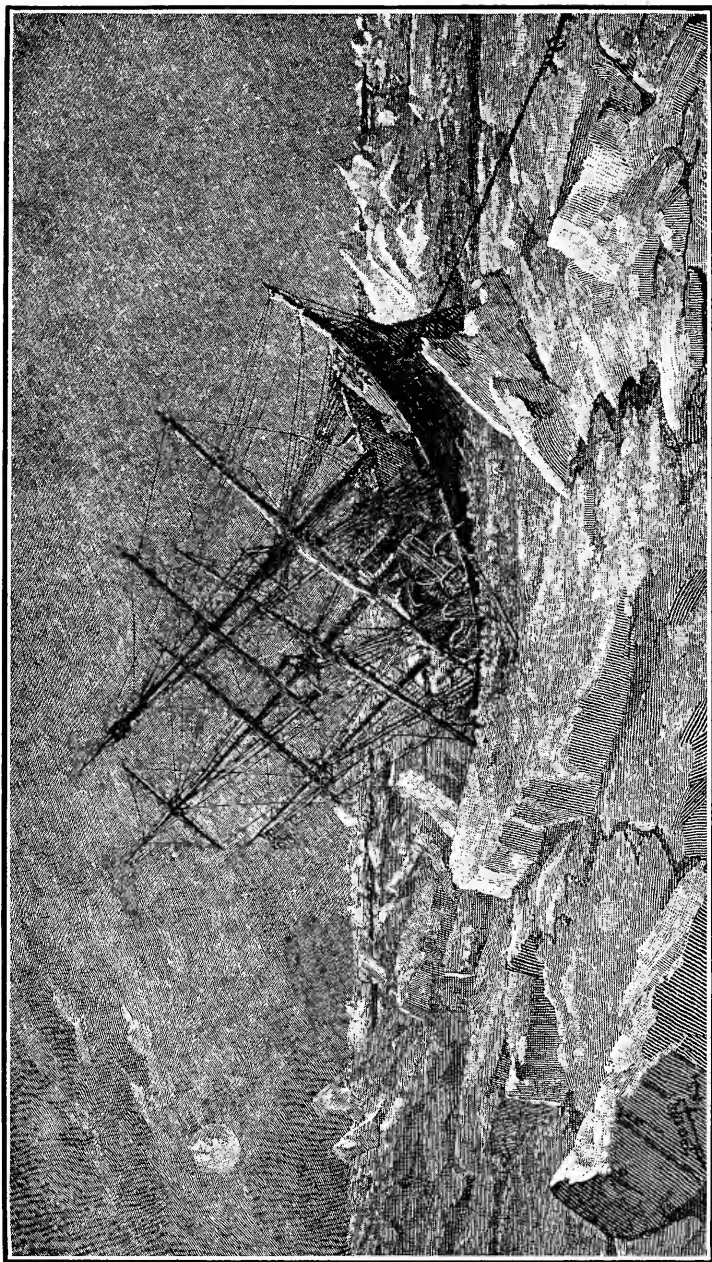
out for seventy-two hours, and halted in all eight hours. The mean temperature of the whole time, including the noontide hours of three days, was about -41 degrees, or 70 degrees *below* freezing-point. Except at their two halts they had no means of quenching their thirst, and they could at no time intermit vigorous exercise without freezing.

Dr. Kane's purpose, as we are aware, was not that of seeking to reach the pole or to make a great northward record, but to search for the Sir John Franklin party or relics of its passage. As many expeditions had entered the channels opening west from Baffin Bay, he had gone farther north, hoping to find other channels leading east or west from the upper extremity of Smith Sound. He believed that, at least, some of the hardier members of the Franklin party might be alive, dwelling perhaps with the far northern Eskimos, or living on the proceeds of their own skill in hunting.

In pursuance of this purpose, at the end of April, 1854, Kane and seven of his men—ten of the party being left on the brig—started north on an exploring excursion, proposing to follow up the ice-belt to the Humboldt Glacier, there to replenish their food supply from the cache of pemmican they had made in their trip of the previous October, and then attempt to cross the ice of the sound to the opposite shore. This was to be the crowning effort of the expedition, to measure the frozen waste which lay between Greenland and the unknown land to the west, and make a search for an opening into the mysterious regions which lay in the higher north. This purpose, while not completely carried out, led to geographical results of much interest. Smith Sound here opens into a wide landlocked sea, since known as Kane Basin, on which fronts the enormous Humboldt Glacier, the greatest probably in existence. Its curved face, from Cape Agassiz to Cape Forbes, measures fully sixty miles in length, and presents a grand wall or front of glistening ice, kindled here and there into dazzling glory by the sun. Its form is that of a wedge, the apex lying inland, at perhaps "not more than a



SALOMON AUGUSTE ANDREE AND HIS BALLOON
In which he started for the North Pole and which bore him to his death.



From DeLong's "Voyage of the Jeannette," Houghton-Mifflin Co.

THE "JEANNETTE" CRUSHED AND SUNK BY THE ICE

After drifting frozen in an ice floe for twenty-two months the "Jeannette," Captain George W. DeLong, commander, was crushed and sunk by the ice on June 13, 1881. The ship had been frozen in the ice. Suddenly a lead opened alongside; the pack closed in again nipping the ship, and then, while the stern was held fast, raising the bow of the vessel, the pressure was renewed with tremendous force, the ship cracking all over. The spar-deck buckled up; the starboard side caved in. All the boat's provisions were quickly hauled away on the ice to some distance, and the crew watched their ship slip through the ice to the bottom before starting on their march to what proved to be one of the most frightful and memorable marches of Arctic history.

single day's railroad travel from the Pole." Thus it passes away into the center of the Greenland continent, which is occupied by an unbroken sea of ice, twelve hundred miles in length and of great depth, that receives a perpetual increase from the constantly falling snows. A frozen sea, yet a sea in constant motion, rolling onward slowly, laboriously, but surely, to find an outlet at each fiord or valley, and to load the seas of Greenland and the Atlantic with mighty icebergs.

This great glacier effectually terminated the labors of the explorers in that direction, and Dr. Kane decided that their future search should be made to the north and east of Cape Sabine,—so named by Captain Inglesfield,—on the coast of Ellesmere Land, which lay on the opposite side of Smith Sound. The expedition above mentioned was one of severe labors and much suffering upon the part of the explorers. The heroic leader, indeed, almost succumbed to the terrible hardships of this adventurous journey, and was carried back to the sledge in so prostrate a condition that recovery seemed hopeless. It may be doubted, indeed, whether his strength was ever thoroughly recruited, though the skill and attention of Dr. Hayes, and his own undaunted spirit, rescued him from the jaws of death. All the men were more or less afflicted, and in the middle of June only three were able to do duty, and of the officers Dr. Hayes alone was on his feet.

During the succeeding spring and summer other expeditions were sent out, the most important being under the lead of William Morton and comprising McGary, Bonsall, Hickey, Riley, and Hans, their Eskimo companion. Its orders were to push forward to the base of the Humboldt Glacier, there replenish their provisions from the cache, and while some of the men attempted to scale and survey the glacier, Morton and Hans were to cross the bay in the dog-sledge and follow the northwest coast, in the hope of discovering a northern outlet from the extensive Kane Sea.

Some interesting results were obtained by the latter party.

Their progress across the ice was not unattended with danger; but these explorers were men not easily daunted. They clambered up hillocks, and bridged broad chasms, and wound in and out of towering bergs, with equal skill and intrepidity; well seconded by their dogs, which showed as much sure-footedness as mules. At Cape Andrew Jackson they reached what appeared to be the farthest limit of the ice; and, looking northward, up what is now known as Kennedy Channel, they saw a broad expanse of open water. The landscape was also of a brighter character than any they had recently seen; a long low plain spreading between large headlands, and relieved here and there by ranges of rolling hills. Down the valley came a flock of brent geese with whirring wings; and the waves were darkened by the shadows of ducks and dovekies. Tern abounded, and the air literally echoed with their shrill cries.

The great channel of open water continued to spread to the northward. Broken ice was floating in it, but with passages fifteen miles wide, and perfectly clear. "There would have been no difficulty," they said, "in a frigate standing anywhere."

Pushing forward boldly Morton and his companion entered upon a bold deep curve in the eastern shore, which they designated Lafayette Bay. Beyond it lay two islands, which Dr. Kane afterwards named in honor of Sir John Franklin and Captain Crozier. The *ne plus ultra* of their adventurous journey was Cape Constitution, in latitude 80 degrees 10 minutes north, where the ice-foot seemed nearly to terminate. Here the cliffs were about two thousand feet in height, nobly guarding the water-way which apparently led to the enchanted region of the North Pole. Morton attempted to pass round the cape, but as there was no ice-foot his efforts were in vain; and he found it impossible to ascend the lofty cliffs. So he fastened to his walking-staff the Grinnell flag of the "Antarctic"—a well-worn relic, which had already fluttered in two Polar voyages—and rearing it on high, its weather-worn folds floated freely "over the highest northern land, not only of America, but of the

globe." Straining his gaze into the misty distance, Morton could dimly see, far away on the western shore, a bare truncated peak, which they supposed to be 2,500 or 3,000 feet in height and to which Kane gave the name of the great pioneer of Arctic travel, Sir Edward Parry.

The summer advanced, August came, and efforts were made to release the brig, which for eleven months had been imprisoned in the ice. These efforts proved useless, the young ice began to close in all around the harbor, and it was evident that another winter lay before them in the ice, unless they should attempt to escape in their boats and seek the Danish settlements on the Greenland coast. Dr. Kane determined to stand by the ship until the following spring, but left it to the others to decide if they would remain with him. Eight concluded to do so, while the remainder started on August 28th in one of the boats, under the leadership of Dr. Hayes, determined to push their way south, if possible. It did not prove possible. One of them returned in a few days after the start and the others in December. For three months they had been frozen up in an Eskimo hut, built in a rock crevice, within three hundred miles of the brig. Here they lived almost without fire and light and on such small supplies of walrus meat as they could procure from natives living fifty miles away. In the end starvation drove them back to the vessel, traveling by moonlight, with the aid of Eskimo dogs and sledges. In the journey Dr. Hayes fell into a space of open water and was wet to the skin. His body was badly frozen in many places, and he was only kept alive by the driver pounding him with his whip-stock.

The winter passed away with distressing slowness. All the precautions they could take did not prevent them from suffering from the terrible cold of an Arctic winter, while the want of proper and sufficient food and the appearance of scurvy among them aggravated their pains. Their location was north of the Eskimo village of Etah—now so well known as a starting point for Arctic expe-

ditions—the nearest settlement being that of Annootok, with the natives of which they kept in communication.

As the winter advanced their condition daily grew worse, scurvy bringing the most of them to the verge of the grave. In December not more than three were capable of active work and to add to their trouble the supply of fuel ran short, so much so that it was necessary to resort to the outside oak sheathing of the vessel.

On February 25, 1855, the sun once more rose above the long, deep, gloomy night of an Arctic winter. Early in March they obtained a supply of walrus meat, which probably saved the lives of the whole party. A brief entry in Dr. Kane's journal, under the date of April 22d, clearly indicates the wretched condition of these brave men. Here it is: "I read our usual prayers; and Dr. Hayes, who feels sadly the loss of his foot, came aft and crawled upon deck to sniff the daylight. He had not seen the sun for five months and three weeks!"

Dr. Kane now undertook a sledge journey to Etah, in order to effect the purchase of a fresh supply of sledge dogs. Here he was hospitably received. A visit to an Eskimo hut, however, is not one of pleasure. Such an "amorphous mass of compounded humanity" is nowhere else to be seen: men, women and children, with little but their native dirt to cover them, crowded together in a close, stifling cell, fifteen feet by six! As Kane failed to obtain the dogs, he was forced to abandon the further exploration he had meditated on in search of traces of the Franklin expedition. Without dogs this was impossible, and out of sixty-two only four were left. Nothing remained but to prepare for their homeward journey, and as they were hopeless of extricating the "Advance" from its icy prison, it became necessary to make the effort in their boats.

These were three in number; but all were well worn by exposure to ice and storm. Two were "cypress whale-boats," twenty-six feet long, with seven feet beam, and three feet deep. These were strengthened with oak bottom pieces, and a long "string piece"

bolted to the keel. The gunwale was fortified, and additional depth obtained, by means of a washboard of light cedar, about six inches high. A neat housing of light canvas was stretched upon a ridge-line sustained fore and aft by stanchions, and hung down over the boat's sides, where it was fastened (stopped) to a jack-stay. Each boat carried a single mast, stepped into an oaken thwart in such a manner that it could be readily unshipped and carried, with the oars, boat hooks, and ice poles, alongside the boat. The third boat was the little "Red Eric," which was mounted on the old sledge; not, indeed, with any intention of using her for purposes of navigation, but to cut her up for firewood, in case the supply of blubber should fail.

Powder and shot, on which the lives of the travelers depended, were carefully distributed in bags and tin canisters. The percussion caps Dr. Kane himself took charge of, as more precious than gold. To Mr. Bonsall were entrusted the arms and ammunition. Places were arranged for the guns, and hunters appointed for each boat. Mr. Petersen looked after the cooking gear. In fact, for each man a special duty was found, and nothing was neglected that could contribute in any way to the safety of the party. The completeness and thoughtfulness of these preparations had the best effect on the spirits of the men; and though some of them still doubted whether escape was possible, all braced up their energies to make the attempt. As most of them were invalids, some little preliminary training was needed; but this required to be very gradual. "We made but two miles the first day," says Kane, "and with a single boat; and, indeed, for some time after this I took care that they should not be disheartened by overwork. They came back early to a hearty supper and warm beds; and I had the satisfaction of marching them back each recurring morning refreshed and cheerful."

They bade farewell to the brig, which had been their home for upwards of two years, with much solemnity. The whole company

assembled in the dismantled winter cabin to assist in the ceremony. It was Sunday. They read prayers and a chapter of the Bible. Then Dr. Kane addressed them in a few manly words. He did not attempt to disguise the difficulties that lay before them; but he declared that they could be overcome by energy and subordination to command, and that the thirteen hundred miles of ice and water that lay between them and North Greenland could be safely traversed by the majority—and that, indeed, there was hope for all. He added that, as men and mess-mates, it was their duty—and a duty enjoined upon them alike by religion and true courage—to postpone every consideration of self to the protection of the sick and the wounded; and this, under all circumstances, and by every one of them, must be regarded as a paramount order. In conclusion, he desired them to reflect upon the trials they had experienced and surmounted, and to remember how often an unseen Power had rescued them in the hour of danger. In Him it was for all of them to put their trust, confident that He would shield and save.

For the first part of the journey all went well and favorable progress was made, though on many days their labors were severe and at times disheartening, as the following extract from Dr. Kane's journal will show:

"From this time," he says, "we went on for some days, aided by our sails, meeting with accidents occasionally—the giving way of a spar or the falling of some of the party through the spongy ice—and occasionally, when the floe was altogether too infirm, laboring our way with great difficulty upon the ice belt. To mount this solid highway, or to descend from it, the axes were always in requisition. An inclined plane was to be cut, ten, fifteen, or even thirty feet long; and along this the sledges were to be pushed and guided by bars and levers with painful labor. These are light things, as I refer to them here; but in our circumstances, at the time I write of, when the breaking of a stick of timber was an irreparable harm, and the delay of a day involved the peril of life, they were grave

enough. Even on the floes the axe was often indispensable to carve our path through the hummocks; and many a weary and anxious hour have I looked on and toiled while the sledges were waiting for the way to open. Sometimes, too, both on the land ice and on the belt, we encountered heavy snow drifts, which were to be shoveled away before we could get along; and within an hour afterward, or perhaps even at the bottom of the drift, one of the sledge runners would cut through to the water."

On the 12th of June Littleton Island was reached and the supplies they had formerly left there were found in excellent order. Ohlsen, one of the bravest and most intelligent of Dr. Kane's crew, at this point succumbed to disease, and was buried decently in a little gorge; his remains being duly protected from fox and bear. After this sad ceremony the march was resumed; but as they neared the Eskimo settlements it became less toilsome, assistance being freely given by the children of the Arctic world. They volunteered their aid at the drag ropes; they carried the sick upon hand sledges; they poured in abundant supplies of fresh food, the quantity of little auks they brought being characterized as "enormous." They fed the explorers and their dogs at the rate of eight thousand birds a week, all of them caught in their little hand nets. No wonder that, under such favorable circumstances, Dr. Kane and his followers threw off their gloom for a time. The men indulged in their old fore-castle songs; the sledges began to move merrily ahead; and the old moody silence gave way to laugh and jest.

Their progress was somewhat remarkable considering the scanty supply of food to which they were reduced, the daily allowance consisting of only six ounces of bread-dust and a lump of tallow about the size of a walnut, to which was added, when fresh water could be procured, a cup of that great restorative, tea. Of this stimulating beverage they drank immoderately and were greatly benefited by it.

At times, too, they had the opportunity of a very acceptable

feast, as when on one occasion they heard the welcome sound of a large flock of eider ducks. Knowing that the breeding place of these birds must be near at hand, they sought and found it. Here they remained for three days, gorging themselves on eggs, of which they found as many as twelve hundred in a day, and unheeding a tempest which was then howling over their heads.

After Cape York was reached and passed the birds failed them and they were reduced to their scanty diet again, their stock of provisions being diminished until they had only about thirty-six pounds per man. Of fuel they had a three weeks' supply, to which they added by cutting up the "Red Eric," and proceeding in the other two boats, on which its wood was loaded.

Under the influence of insufficient food the strength of the wayfarers steadily declined. Five ounces of bread-dust, four of tallow and three of bird-meat was all that could be allowed for a day's rations, a very small supply in that severe climate and under circumstances of incessant toil.

Dr. Kane remarks as curious that the effect of insufficient food is not, as might be supposed, the pangs of hunger. The first symptom is loss of power, often so imperceptibly brought on that only an accident reveals its extent. "I well remember," he says, "our look of blank amazement as, one day, the order being given to haul the 'Hope' over a tongue of ice, we found that she would not budge. At first I thought it was owing to the wetness of the snow-covered surface in which her runners were; but as there was a heavy gale blowing outside, and I was extremely anxious to get her on to a larger floe to prevent being drifted off, I lightened her cargo, and set both crews upon her. In the land of promise off Crimson Cliffs, such a force would have trundled her like a wheelbarrow: we could almost have borne her upon our backs. Now, with incessant labor and standing hauls, she moved at a snail's pace."

It was on this occasion that the little company nearly lost their best boat, the "Faith," which drifted away from the ice-floe. The

sight produced an almost hysterical impression, for she had on board all their stores. Happily, before they could fully realize all the consequences of her probable loss, a flat cake of ice eddied into the vicinity of the floe. McGary and Dr. Kane sprang upon it, and succeeded in floating it across the chasm in time to secure the boat. Then the rest of the crew rejoined her, with emotions of thankfulness which the reader may well imagine.

In this extremity, the discovery of a seal asleep upon a field of ice filled them with joy. They approached it with extreme care, and as it raised itself in its fore-flippers, preparatory to a plunge, a well-aimed rifle shot brought it down.

With a wild shout both boats charged full upon the floes. Eager hands seized the precious booty, and lifted it upon safer ice. The men, as if lost in a delirium of joy, ran over the ice, crying, laughing and brandishing their knives. Never was animal more quickly prepared for the table; never were viands more keenly relished. A grand cooking fire was kindled, and the famished voyagers enjoyed that night a strange, almost a savage orgie.

It is unnecessary to dwell minutely on the later incidents of the journey. On the 1st of August Dr. Kane sighted the Devil's Thumb, and was soon in waters that are familiar to every whaler. Passing to the south of Cape Shackleton, the voyagers followed up the quiet water channels that run parallel to the coast, occasionally killing a seal or some birds, and at night encamping upon the rocks.

Two days later, as they were slowly rowing through the mist, a familiar sound—the cadence of a “halloo”—came to them over the waters. With joyous hearts they pulled in the direction of the sound, and in about half an hour could make out the single mast of a small shallop. “’Tis the Upernavik oil-boat!” cried Petersen, half laughing, half crying. And such, indeed, it proved to be. In a few minutes they were on board of her, and in the embraces of old friends.

“Here,” says Kane—and the conclusion of his narrative is best

given in his own words—"here we first got our cloudy, vague idea of what had passed in the big world during our absence. The friction of its fierce rotation had not much disturbed this little outpost of civilization; and we thought it a sort of blunder as Carlie Mossyn told us that France and England were leagued with the Mussulman against the Greek Church! He was a good Lutheran, this assistant cooper, and all news with him had a theological complexion. . . .

"But 'Sir John Franklin?' There we were at home again. Our own delusive little speciality rose uppermost. Franklin's party, or traces of the dead which represented it, had been found nearly a thousand miles to the south of where we had been searching for them. . . . And so we 'out oars' again, and rowed into the fogs.

"Another sleeping-halt has passed, and we have all washed clean at the fresh-water basins, and furbished up our ragged furs and woolens. Kasarsoak, the snowy top of Sanderson Hope, shows itself above the mists, and we hear the yelling of the dogs. Petersen had been foreman of the settlement; and he calls my attention with a sort of pride to the tolling of the workmen's bell. It is six o'clock. We are nearing the end of our trials. Can it be a dream?

"We hugged the land by the big harbor, turned the corner by the old brew-house, and in the midst of a crowd of children hauled our boats for the last time upon the rocks.

"For eighty-four days we had lived in the open air. Our habits were hard and weather worn. We could not remain within the four walls of a house without a distressing sense of suffocation. But we drank coffee that night before many a hospitable threshold, and listened again and again to the hymn of welcome, which, sung by many voices, greeted our deliverance."

Dr. Kane and his party remained at Upernavik until the 6th of September, when they embarked on board the "Marianne" for the Shetland Isles. But putting in at Godhavn, they caught sight

of an American squadron, under Captain Hartstene, which had been despatched in quest of them, and soon afterwards found themselves under the shelter of the national flag. At New York Dr. Kane received the honorable welcome to which his courage, his fertility of resource, his patient resolution and his noble purpose had entitled him. And though he had failed to discover Sir John Franklin, he had deserved well of the civilized world, having considerably enlarged its knowledge of the Polar regions.

Yet his suffering and exposure had fatally undermined his constitution. In 1856 he went to England and thence to Cuba to recuperate, but his health was broken beyond recovery and he died at Havana in February, 1857, two years after his return.

CHAPTER XV.

Hayes, Hall and other Hardy Adventurers

IN 1860 began another of the American expeditions to the Pole, under the command of Dr. Isaac I. Hayes, who had accompanied the Kane expedition as surgeon, had discovered Grinnell Land in 1855, and had traversed the icy seas to a latitude beyond 80 degrees. On the 6th of July, 1860, he set sail on an expedition under his own command, in which he hoped to pass the ice belt in Smith Sound and reach the open polar sea—he firmly believing, from past experiences, that the sea about the North Pole was not frozen. He was accompanied by Messrs. Sonntag and Radcliffe as astronomer and assistant astronomer, and by a crew of twelve officers and men.

On the 30th of July they crossed the Arctic Circle, and on the second day of August, as they lay becalmed off the Greenland coast, they beheld a scene which Dr. Hayes describes for us in the following glowing language.

“It seemed as if we had been drawn by some unseen hand into a land of enchantment. Here was the Valhalla of the sturdy Vikings, here the city of the sungod Freya; Alfheim, with its elfin curves, and Glitner, more brilliant than the sun, the home of the happy; and there, piercing the clouds, was Himnborg, the celestial mount.”

His eloquent diary gives further details of the scene before his enraptured eyes. His description is well worth reproducing, as a pen-picture of the beauty often to be seen in the northern seas:

“The air was almost as warm as that of a southern summer eve; and yet before them were the icebergs and the bleak moun-

tains, with which it is impossible, in this land of green hills and waving woods, to associate any idea other than that of cold repulsiveness. Bright and soft was the sky, and as strangely inspiring as that of Italy. The bergs had lost their cold, frozen look, and glittered in the glow of the brilliant heavens like masses of solid flame or burnished metal. Those near at hand seemed to have been wrought out of Parian marble, and incrustated with shining gems of pearl and opal. One in particular challenged attention by its grandeur. Its form was not unlike that of the Roman Coliseum, and it lay so far away that half its height was buried beneath the rim of the 'blood-red waters.' As the sun, in its course along the horizon, passed behind it, one might have thought that the old Roman ruin had broken out into a sudden conflagration.

"Where the bergs cast their silent shadows the water was a rich green; and nothing could be softer or more tender than the gradual coloring of the sea as it shoaled on the sloping tongue or spur of each floating mass. When the ice overhung the water the tint deepened, and a cavern in one of the nearer bergs exhibited the solid color of the malachite mingled with the transparency of the emerald; while, in strange contrast, a broad streak of cobalt shot diagonally through its body.

"The romantic character of the scene was increased by the numerous tiny cascades which leaped into the sea from these floating islands; the water being discharged from lakes of melted snow and ice which tranquilly reposed far up in the valleys separating the icy ridges of their upper surface. From other bergs large pieces were occasionally detached, crashing into the water with deafening roar, while the slow ocean-swell resounded hoarsely through their broken archways."

But they were soon to find that the beauty of the iceberg may conceal imminent peril. Shortly after leaving Upernavik they had such an experience, having come near a nest of icebergs, on which the current rapidly carried their vessel. 'An eddy threw them upon

one of these huge masses, great blocks falling which would have crushed the ship if they had struck her.

This peril escaped, another threatened them. A long tongue from the berg projected immediately beneath the schooner, and the keel slipped and grinded upon it until it seemed probable that the ship would be hurled into the air, or else capsized. Here again the berg proved their safety. A loud report was heard; another and another followed in swift succession; the roar seemed to fill the air with a thousand echoes. The opposite side of the berg had split off, piece after piece, tumbling a vast volume of ice into the waves, and sending the revolving berg careening back upon the ship. The movement now was quicker; fragments began again to fall; and, already sufficiently alarmed by the dissolution which had taken place, Dr. Hayes and his followers were in momentary expectation of seeing the whole side nearest to them give way, and crash down upon the steamer.

They escaped this danger by planting an ice-anchor and drawing the vessel away from the berg. They were barely in time to escape destruction. Scarcely were they twenty yards distant when the expected disruption occurred. The side nearest them split off and crashed wildly into the sea, raising a tremendous swell and covering the tossing waters with fragments of ice. Luckily for them they were beyond its reach, and they hastened to get away from that scene of peril.

September had arrived when they at length crossed Melville Bay and entered Smith Sound. The young ice was forming fast and the season near its close, and it became necessary to seek winter quarters. A place was selected in a sheltered cave about twenty miles by latitude, but eighty miles by the coast line, south of Dr. Kane's wintering place at Rensselaer Harbor. On their way thither they had picked up Hans, the Eskimo, who had done such good service for Kane and his party. With him were his wife and child, who did not prove welcome additions to the ship's crew.

The sun sank out of sight behind the southern hills on the 15th of October; and the little company of brave men were face to face with the long winter darkness of the Polar World. At first a kind of soft twilight prevailed, and the golden glow of the unseen orb of day rested on the mountain tops; but surely and steadily the partial radiance lessened, and slowly and surely came on the sad obscurity of the Arctic night.

Dr. Hayes occasionally amused himself with taking his team of dogs on an excursion. They were twelve in number, healthy, strong and swift of foot. They would carry the sledge over the ice at a tremendous speed, accomplishing six miles in twenty-eight to thirty-three minutes. But to manage them is quite an art, for they are guided solely by the whip and voice.

On the outside are placed the strongest dogs; and the team sways to right and left, according as the whip falls on the snow to the one side or the other, or as it touches the leading dogs. The voice aids the whip, but the experienced driver relies more upon compulsion than upon persuasion. This whip is a wonderful instrument. Its lash is about four feet longer than the traces, and tipped with a "cracker" of hard sinew, quite capable of phlebotomizing a refractory animal. Its material is simply raw seal-hide, and it is attached to a light whip-stock only two feet and a half in length. Hence, to roll out the lash to its full length is a truly difficult undertaking, and in this, as in other arts, it is practice only that makes perfect.

Driving an Eskimo team, take it all in all, seems to be, as Dr. Hayes describes it, the very hardest kind of hard work. Incessantly must the driver ply his whip, and ply it mercilessly as well as incessantly, or it will avail him nothing. The least hesitancy or weakness on the driver's part is immediately detected by his dogs, and they act accordingly. Unless fully convinced that the soundness of their skins is at his mercy, they will indulge in the greatest liberties. "If they see a fox crossing the ice," says Dr. Hayes, "or

come upon a bear-track, or 'wind' a seal, or sight a bird, away they dash over snow-drifts and hummocks, pricking up their short ears and curling up their long bushy tails for a wild, wolfish race after the game. If the whip-lash goes out with a fierce snap, the ears and the tails drop, and they go on about their proper business; but woe be unto you if they get the control. I have seen my own driver sorely put to his mettle, and not until he had brought a yell of pain from almost every dog in the team did he conquer their obstinacy. They were running after a fox, and were taking us toward what appeared to be unsafe ice. The wind was blowing hard, and the lash was sometimes driven back into the driver's face; hence the difficulty. The whip, however, finally brought them to reason; and in full view of the game, and within a few yards of the treacherous ice, they came first down into a limping trot, and then stopped, most unwillingly. Of course this made them very cross, and a general fight, fierce and angry, now followed, which was not quieted until the driver had sailed in among them and knocked them to right and left with his hard hickory whip-stock."

Slowly the winter passed, with its long hours of monotony and its few alleviations. Some amusement was afforded by the conjugal vagaries of Hans and his wife. The Eskimo lady was singularly disinclined for work, and when invited to assist in replenishing the men's winter wardrobe obstinately refused. Dr. Hayes describes her as the most dogged of her sex. She was indifferent to everything and everybody, and about once a fortnight indulged in a fit of ill temper, in which she was wont to declare her intention of abandoning Hans and the expedition, and returning to her own people. She essayed the experiment on one occasion, and, with her baby on her back, dashed away towards Cape Alexander. Hans, however, came out of his tent, as calm and impassive as ever, and stood leisurely smoking his pipe, and surveying the receding form of his wife and child with the most provoking unconcern. Dr. Hayes thought it desirable to call his attention to his wife's strategic movement.



A DEATH ON THE ARCTIC ICE

While in winter quarters near Cape Sabine, Grinnell Land, Rice and Frederick started to obtain meat abandoned the previous November. Their footgear froze solid and they were caught in a drifting snow storm. On reaching the spot where the meat had been left no traces of it were to be found. They started back, and Rice began to show signs of exhaustion. He became delirious, and Frederick in a temperature of thirty degrees below freezing stripped off his jumper in which to wrap his comrade's feet. For four hours he held Rice in his arms, thinly clad, until the wretched man died. Frederick not only brought back to the starving party's headquarters everything that the two men had taken away, but also turned in Rice's unconsumed rations.



FAMOUS EARLY ARCTIC ADVENTURERS

Baron Wrangel
Sir John Ross

Henry Hudson
Sir Edward Parry

"Yes, me see."

"Where is she going, Hans?"

"She no go; she come back all right."

"But she will freeze, Hans?"

"She no freeze; she come back by-by, you see."

And he continued to smoke his pipe with a quiet chuckle and a complacent conviction of his knowledge of the ways of womankind in general, and of his wife in particular. And in about two hours the Eskimo Xantippe came back, looking very blue and cold and evidently much subdued.

A disagreeable incident of the winter detention at Port Foulke was the outbreak of an epidemic disorder among the dogs, resembling mania or delirium. Of the character of this we have previously spoken. The mortality was dreadful. In the first two weeks of December eighteen died; three more deaths occurred in the following week; and Dr. Hayes found himself reduced to nine animals. As all his plans of exploration in the coming spring depended upon the efficiency of his teams as a means of transportation across the ice, his anxiety was great; and in order to obtain a fresh supply, he determined on sending Mr. Sonntag, with Hans as driver, to the nearest Eskimo settlement on Northumberland Island, if necessary, or to Whale Sound, if haply any station should be found upon its shores.

The expedition proved an unfortunate one. After several months of absence, Hans came back alone, with the bad news of the death of his companion and without the dogs for which he had been sent. The story he told was that Mr. Sonntag had incautiously stepped on some thin ice covering a recently closed tide-crack. It gave way and he fell in. Hans hastened to his rescue, and the two then turned back for Sorsfalik, where a snow hut could afford them shelter. Unfortunately, Mr. Sonntag did not change his wet clothing; and when the sledge halted at Sorsfalik, Hans discovered that his companion was stiff and speechless. Removing

him into the hut as quickly as possible, he placed him in the sleeping bag, administered some brandy, and having tightly closed the hut, lighted their alcohol lamp, for the double purpose of elevating the temperature and making some coffee. His efforts were in vain; Sonntag never recovered consciousness, and in a few hours died.

Hans continued his journey alone, but found it difficult to discover any Eskimos, and from those he met at length no dogs were to be had. When he returned his team was reduced to five miserable attenuated dogs, while the unfortunate trip had resulted in the death of one of the most esteemed members of the party.

With the approach of spring, however, Dr. Hayes succeeded in purchasing some good dogs from Eskimos who visited his camp, until he got together a group of seventeen hardy animals. With these he set out on a preliminary trip northward, of which we need only say that one morning, when he emerged from his sleeping cave in the snow, he found the thermometer to record the bitterly low temperature of 68 degrees below zero, or 100 degrees below the freezing point. We find few records surpassing this, though Dr. Cook in his recent polar trip reports the extraordinary low temperature of -83 degrees Fahrenheit. During this excursion Rensselaer Harbor was reached and traces of Dr. Kane's ship, the "Advance," were sought. None were found, and it became probable that the deserted ship had sunk before the onset of the ice-floes.

Returning from this preliminary excursion, preparations were made for a more extended one, and on the 3d of April the party, twelve in number, set out merrily with two sledges, "The Hope," drawn by eight dogs, and "The Perseverance," by six. It did not go on merrily, for difficulties and obstacles beset the explorers, so that in twenty-two days they advanced only thirty miles. Four more days passed, and then, on April 28th, being half-way across the Kane Basin, Hayes sent back eight of his men, proceeding with three companions in his dash towards Grinnell Land, on the opposite side of the water. This was not reached until May 11th, after thirty-eight days of exhausting labor.

From this point the energetic explorers pushed northward, though only twelve days' allowance of dog food remained. Onward they went until Kennedy Channel was entered, and a point beyond that attained by Morton, in Kane's expedition, was reached. At this point Jansen, the strongest man in the expedition, broke down. He was left in charge of Macdonald, and Hayes pushed on with Knorr, the remaining member of the small party.

His progress was checked at length by the rotten ice, which proved to be impassable. Hayes had reached his *ne plus ultra*; he had not attained latitude 82 degrees, but he had actually advanced to the shore of that northernmost gulf, into which Kennedy Channel opens through a broad bay. Here the ice was broken up, and waterways ramified across it, and led into the free ocean which, it may be, lies beyond. Climbing to the summit of a rugged cliff about 800 feet in height, Hayes was rewarded for his labors and suffering by a glorious prospect. Standing against the dark "water-sky" at the north, rose, in dim outline, the white sloping summit of a noble headland, the northernmost known land upon the globe. He calculated it to be in latitude 82 degrees 30 minutes, or about four hundred and fifty miles from the North Pole. Nearer, another bold cape stood forth; and nearer, a third headland towered majestically above the sea, as if pushing up into the very skies a lofty mountain-peak, on which winter had dropped its diadem of snows.

Nothing remained for him but to return as quickly as possible to Port Foulke; as quickly as possible, for the summer was rapidly approaching, the ice was yielding to the solar influence, and the open water was eating from Kennedy Channel into the ice-masses of Smith Sound in the north, as well as through Baffin Bay in the south. But before turning his back on the unexplored Polar Sea, he desired to erect some memorial of his adventures. Some flags which he had brought with him were suspended by a whip-lash between two tall rocks; and the following record, enclosed in a small glass vial, was deposited beneath a hastily-reared cairn of stones:

"This point, the most northern land that has ever been reached, was visited by the undersigned, May 18, 19, 1861, accompanied by George F. Knorr, traveling with a dog-sledge. We arrived here after a toilsome march of forty-six days from my winter harbor, near Cape Alexander, at the mouth of Smith Sound. My observations place us in latitude 81 degrees 35 minutes, longitude 70 degrees 30 minutes west. Our further progress was stopped by rotten ice and cracks. Kennedy Channel appears to expand into the Polar Basin; and, satisfied that it is navigable at least during the months of July, August, and September, I go hence to my winter harbor, to make another trial to get through Smith Sound with my vessel, after the ice breaks up this summer. I. I. HAYES.

"May 19, 1861."

It must suffice here to state that no further discovery was made, and that in the following summer the explorer brought his vessel, the "United States," back to the country whose name it bore. Dr. Hayes made another voyage in 1869, but on this occasion confined his trip to Southern Greenland.

At the time of Hayes's first voyage north another American explorer of note was making his pioneer trip to the Arctic seas. This was Charles Francis Hall, a man who from boyhood had made the polar regions the goal of his desires. His means were very limited, but he succeeded in interesting some friends in his project, which at first was confined to a search for relics of the Sir John Franklin expedition. Henry Grinnell, the patron of the Kane expedition, was among those who aided him, and he set out in 1860 on a voyage which yielded no notable results except the discovery in Frobisher Strait of relics of the visit of Martin Frobisher, three centuries before.

A second voyage was made in 1864, it being 1869 before he returned to the United States. During this long absence he devoted himself to an enthusiastic search for relics of the Franklin party, pushing westward as far as King William's Land, and finding or

obtaining from the Eskimos many articles which had belonged to Franklin and his men, about one hundred and fifty in all.

Hall set out on a third voyage in 1871, this time with the ambitious purpose of seeking the North Pole. He had the support of the government in this expedition, and was instructed to explore and survey the passage between Greenland and Grinnell Land and, if possible, to reach the Pole. Setting out on June 29, 1871, in a steam vessel, the "Polaris," with a crew of thirty-three, he had the good fortune to carry his ship readily through the seas which had baffled Kane and Hayes, sailing past the highest points they had reached in sledge journeys and passing through Robeson Channel to where it opens into the waters of the Polar Sea. The highest point reached was in latitude 82 degrees 16 minutes, about two hundred miles north of Kane's highest and fifty miles beyond that of Hayes.

It was now the 7th of September, and it was decided to lay up for the winter, this being done in a sheltered cove in latitude 87 degrees 38 minutes, which Hall named Thank God Harbor. While preparations for "wintering" were being made, Captain Hall started on a sledge-journey, which occupied from October 10th to October 24th. On his return he was suddenly taken sick. At first it was supposed to be only a temporary bilious attack, but on the following day the symptoms became alarming, and he was frequently delirious. His illness continued, and gradually assumed the appearance of paralysis.

Early on the 8th of November, the heroic explorer's adventurous career was terminated. "Last evening," says Tyson, "the captain himself thought he was better, and would soon be around again. But it seems he took worse in the night. Captain Buddington came and told me he 'thought Captain Hall was dying.' I got up immediately, and went to the cabin and looked at him. He was quite unconscious—knew nothing. He lay on his face, and was breathing heavily; his face was hid in the pillow. It was about half-past three

o'clock in the morning that he died. Assisted in preparing the grave, which is nearly half a mile from the ship, inland; but the ground was so frozen that it was necessarily very shallow—even with picks it was scarcely possible to break it up."

On the 11th he wrote: "At half-past eleven this morning we placed all that was mortal of our late commander in the frozen ground. Even at that hour of the day it was almost dark, and I had to hold a lantern for Mr. Bryan to read the papers. It was a gloomy day and well befitting the event. The place also was gloomy and desolate in the extreme."

Thus ended Hall's ambitious project of conquering the secret of the North Pole; and thus was quenched the enthusiasm of a singularly ardent nature. Though better fitted for a volunteer than a leader, to act alone than to govern others, he undertook his work with a boundless energy and an untiring perseverance; and had he lived, it is certain he would have advanced as far to the northward as man is able to go. We cannot but regret so sudden and disastrous a termination of a chivalrous enterprise. Yet there is something appropriate in his place of burial; and that lonely grave amid the peaks and icebergs of the Polar World is surely a more suitable sepulchre for such a dauntless explorer than one in the crowded city cemetery, or even the village churchyard. On no man was the strange magical spell of the North more powerfully laid than on Charles Francis Hall; and it is well that he should sleep where the cold northern winds blow across his grave, and the weird radiance of the aurora falls upon it.

Fortunate as had been the northward passage of the "Polaris," through easy channels and open seas, on her return in the summer of 1872 the ice demon lay in wait for her and played havoc with the gallant ship. Caught in the floes off the southern entrance of Kennedy Channel, in latitude 80 degrees, the vessel drifted southward in the ice to 78 degrees 28 minutes. Here a furious gale assailed her, the grinding ice crushing in her strong sides until the crew

believed that she was wounded beyond hope and would sink with the opening of the floe.

The only hope seemed to be to take to the ice, and the crew began getting out stores, tents, clothing, boats, everything they could lay hands on. Nineteen of the ship's company, including two Eskimos and their wives and children, scrambled out on the pack, while the others passed them the articles as rapidly as possible. Through the wind and the cold they worked, clouds of snow driving past them and finally thickening until they could barely see. The force of the gale in time grew so great that those on the pack crouched behind the stores they had rescued, waiting for it to abate.

As they lay thus, the sound of cracking ice came to them from the direction of the ship. Peering through the gloom, a cry of despair broke from their lips. The ice had parted in the gale, and down the long line of open water that lay before them they saw the dark hull of the "Polaris" vanishing in the gloom. She was gone—probably to sink with all on board. They were left adrift on an ice-pack that at any moment might split asunder and drop them into the freezing water. Or if held together death from cold and starvation threatened them. Never had men been in a more terrible situation.

The story of these castaways is a long and distressing one, but must here be dealt with briefly. In the morning, when the storm had abated and the air was clear, they looked eagerly for some sign of the "Polaris." She was visible, but miles away, and as the day went on vanished from sight, leaving them stranded on floating ice in the Arctic Sea.

Fortunately for the party, Captain Tyson was with them on the floe and at once took charge of affairs. The others included Mr. Meyers, the meteorologist, the steward, cook, six seamen, and Joe and Hans, two Eskimos, with their wives and children, one of these being an infant born on the ship and only two months old.

The separation from the ship had taken place on October 15th,

and during the night of the 16th, another disruption of the floe occurred, Tyson and his companions finding themselves adrift on one part, with one of the two boats, while the other boat and part of the provisions remained on the main body of the floe. On the 21st, however, they succeeded in recovering these precious and necessary articles; and, afterwards, in removing to a larger and firmer floe which lay much nearer the shore. Then they built up their snow-houses, forming quite a little encampment: one hut for Captain Tyson and Mr. Meyers, a second for the men, others for the Eskimos, for Joe, Hannah, and Puney and for Hans and his family; a store-hut for provisions, and a cook-house,—all united by arched galleries or corridors made of snow. These were true *igloës*, and made in the regular Eskimo fashion.

Their hope was to get to the shore, where their ammunition might provide them with some species of game. On the 30th of October the day's allowance for the whole company consisted of two pounds of pemmican, six pounds of bread, and four pounds of canned meat. On such scanty rations everybody's strength rapidly declined; and though the natives continued hunting, no success attended their efforts. In fact, it is very difficult to find the seal in winter. They live principally under the ice, and can be seen only when the ice cracks. Being warm-blooded animals, they cannot long continue under the ice without breathing. Consequently, for the purposes of respiration, they make air-holes through the ice and snow; but at the surface these holes are so small—not more than two and a half inches across—that they are scarcely distinguishable, especially in the dim uncertain light of an Arctic winter-day. A native will sometimes remain watching a seal-hole for thirty-six or forty-eight hours before getting a chance to strike; and if the first stroke misses, the seal is gone for ever. Barbed spears are used by the hunter; and as the seal's skull is exceedingly thin, a well-aimed blow is sure to penetrate, and then the prize can be held securely until the hole has been sufficiently enlarged for the body to come through.

Two seals were captured on the 21st of November, and proved a temporary alleviation of the distress of the castaways. All the dogs but four had been sacrificed, and everybody was suffering pitifully from weakness. The ice-floe, meantime, continued to drift to the southward. And so the dreary record continues day by day: other seals being occasionally caught, but the situation of the wanderers growing daily more critical and distressing. For eighty-three days the sun was lost to sight while the cold was intense. Huddling in their snow-houses, with lamps for their only source of heat, hope almost abandoned them during those wearisome days.

Never, perhaps, was the return of the sun more welcomed than by the desolate castaways on the floe. But its appearance and the commencement of spring was not entirely an unmixed blessing. The rising temperature naturally caused the ice to break up, and as the floe upon which they were marooned gradually decreased in size, fresh anxiety was caused to them by the possible danger of their haven being broken up. This was realized on March 11th, when their ice raft broke up in a gale, leaving them on a piece less than one hundred yards square. Fortunately it was of great thickness and solidity.

As March merged into April things grew worse and their position more perilous. A violent gale, which continued, with little intermission, for several days, reduced the storm-beaten company to great distress from the impossibility of capturing any seals. They began to suffer the pangs of hunger, and at one time it seemed as if death by starvation would be the termination of their miseries. Nay, worse results were to be apprehended. "Some of the men," wrote Tyson, on the 15th of April, "have dangerous looks; this hunger is disturbing their brains. I cannot but fear that they contemplate crime. After what we have gone through, I hope this company may be preserved from any fatal wrong. We can and we must bear what God sends without crime. This party must not disgrace humanity by cannibalism." Fortunately a seal was killed

on the 18th, and this supply came like a direct blessing from Heaven to recruit their strength.

Just as it was needed! For at night, on the 20th, a heavy sea suddenly arose, and sweeping in violent billows over the ice-floe occupied by the castaways, carried off their tent, their skins, most of their bed-clothing,—everything, in fact, that was movable,—and plunged them into destitution. Only a few articles were saved, which they contrived to stow in the boat; the women and children were already in it, or the little ones must certainly have perished. It required all the efforts of the men to save the boat. They knew that their lives depended on its preservation, and this knowledge inspired them to exertions which, in their enfeebled condition, were almost superhuman. For twelve hours they held on to it, “like grim Death;” scarcely a sound was uttered, save and except the crying of the children, and Captain Tyson’s order to “Hold on,” “Bear down,” “Put on all your weight,” and the responsive “Ay, ay, sir,” which, in this terrible crisis, came readily enough. Discipline was temporarily restored under the influence of danger.

We find them, on the 22d of April, half drowned, half frozen, without shelter, and without food! Had the end come? Not yet: Heaven again came to their rescue; a bear was sighted, pursued, killed, brought back to the “camp” in triumph, and speedily devoured. On the 28th, three young seals fell to the hunters’ rifles, and abundance reigned. On the same day they were cheered by the appearance of a steamer working her way through the ice to the southwest; and though she did not see them, it infused new hope into their hearts, as it was a sign and a token that they might now expect to be relieved. And, indeed, on the following day another steamer was seen. Then volleys were fired; colors were hoisted; loud shouts were raised; but these combined efforts failed to draw her attention to the little company on the ice-raft. A third steamer afterwards came in sight, but did not bring them deliverance.

However, it was not far off. On the 30th, a fourth steamer was

discovered through the fog, and so near them that Hans leaped into his kajak and paddled towards her. Meantime, she perceived Captain Tyson's signals, and, to the intense joy of all these storm-beaten, wan, attenuated, suffering castaways, bore down upon them. In a few minutes she was alongside of their piece of ice.

"On her approach, and as they slowed down," says Captain Tyson, whose words we shall here adopt, "I took off my old Russian cap, which I had worn all winter, and waving it over my head, gave them three cheers, in which all the men most heartily joined. It was instantly returned by a hundred men, who covered her top-gallant-mast, forecastle, and fore-rigging. We then gave three more, and a 'tiger;' which was appropriate, surely, as she proved to be the sealer 'Tigress,'—a barkentine of Conception Bay, Newfoundland."

They found that in the 196 days they had spent on the floe they had drifted over 1500 miles from the latitude in which the "Polaris" was beset on October 12th. For the time they believed they were the only survivors of the expedition, but in this they were wrong. The remainder of the party also escaped, though without undergoing quite the same hardships as themselves.

When the "Polaris" broke away from the ice, she did not sink, but drifted rapidly before the gale through the open channel. Captain Buddington, who had assumed command when Captain Hall died, and the twelve men who remained on board, managed to keep the disabled vessel afloat, but they could do no more until she again became involved in the ice. By that time all hopes of returning to the place where the other men were on the ice was abandoned, and, as the water was fairly open, the efforts of the crew were mainly directed to warping the ship towards the coast. By good fortune she managed to escape from the crushing packs, and, with tireless effort and great care, she was at length brought within sight of land. Then she was caught in the ice along the shore and so severely nipped that her ruin was complete. She, however, did not sink, and her crew were able to reach the land.

Selecting a site for an encampment, they removed thither enough timber from the broken-up vessel to construct a house, to which they also removed enough stores to last them. When these necessities were secured, they brought more timber ashore, and, during the longer winter night, they employed themselves in constructing a couple of boats. It was a laborious task, and but slow progress was made until daylight returned. Then they were able to carry on the work faster; but it was the middle of May before they had them finished and seaworthy.

As soon as the ice began to break up, they launched the boats, which were fully provisioned from the wreck, and on June 3d they sailed away to the south. Three weeks later they sighted a whaler, the "Ravenscraig," who took them aboard, and within a few months of their comrades, whom they thought had all perished, landing in America from the "Tigress," the boat party also landed, having saved, in addition to themselves, all the records of the surveys and observations made by the expedition. These were of great geographical value, making known much of the neighborhood of the straits between Greenland and Grant's Land. The expedition, although attaining to a high latitude, did not succeed in reaching the Pole, but their adventures made a fascinating chapter in the history of Polar research.

There is one more expedition fitted to speak of in this chapter, as it bore a certain resemblance to those of Hayes and Hall in character. It was an enterprise sent out by the English government in 1875, under the command of Sir George Nares, its purpose being to reach the Pole if possible. It comprised two ships, the "Alert" and the "Discovery."

Pursuing the same course as that of Hall in the "Polaris," they reached the high latitude in which the Robeson Channel opens into the Polar Sea. Here the "Discovery" wintered, while the "Alert" went farther north, taking with her an officer and a sledge team of men from the "Discovery," to be sent back overland when winter quarters were selected.

On the last day of August the "Alert" met a particularly heavy floe, the ice forming it being of the massive character which denoted that its origin was the Polar Sea. Once the grinding mass of hummocks, rising higher than the vessel's decks, threatened to enfold her. There would have been no hope of escape if they had, and only by persistently ramming her way through some of the looser ice did she escape in towards the shore. Next day a strong gale sprang up from the southwest, and the "Alert" went along at ten miles an hour in an open channel between the land and the heavy pack which was drifting about three miles out. By midday they reached latitude 82 degrees 24 minutes north, and the flags were run up to the mastheads amid general rejoicing, for it was the farthest point north to which a ship had yet sailed.

With the channel showing clear ahead of them and the spanking breeze astern, expectation was high on board that they would be able to sail right up to latitude 84 degrees, but within an hour their hopes were suddenly and thoroughly checked. On hauling to the westward they rounded a promontory and found that the land trended away to the west. The wind veered round to the northwest and drove the ice in upon the channel, which gradually became narrower until, when off Cape Sheridan, the main pack was observed to be touching the grounded ice and effectually barring all further progress. The "Alert" was run close up to the end of the channel, and then, when it was certain that there was no chance of getting through the barrier, she was anchored to a floe which rested aground off the cape. The next day, as the heavy ice of the pack was grinding against the stranded floe, and an opening just large enough for the vessel to get in was observed in the floe, she was warped into the basin.

She was barely inside when a solid hummock crushed against the opening, forming a great barrier between the vessel and the outer moving pack. Had it struck there a few minutes earlier the vessel would have been severely injured by the "nip," but as it was

the hummock formed an admirable shelter from the pressure of the pack. This was often so severe that masses over 30,000 tons in weight were broken off and forced up the inclined shore, rising twelve and fourteen feet higher out of the water as they crunched along the ground.

With the opening of the next spring a sledging party was sent out, taking with it two whale-boats in case open water should be reached. There proved no need of these boats, the supposed "open polar sea" of Kane and Hayes proving a vast sheet of ice, seemingly of such ancient origin that Nares gave it the title of "palæocrystic ice."

As the days went on the toil of dragging the sledges over the endless ice field grew intensely wearisome, and although the men stuck to their task with true British obstinacy, it began to tell upon them. One man fell sick, growing weaker and weaker until he was no longer able to pull, and then was unable to walk. One of the boats was abandoned, and the sick man laid on a sledge. His condition was more than disquieting to the leaders, for it was evident he was suffering from scurvy, and no one could say who would be the next to develop it.

On April 23d they added only a mile and a quarter to their distance, for they had come upon clumps of ice hummocks which made their progress so difficult that they had to combine forces to haul first one sledge and then another over the obstacles. On April 28th, when they were seventeen miles from the shore, they found the track of a hare in the snow, going towards the land, but with the footprints so close together that the animal was evidently very weak. Where it had come from, or how it had got so far from the shore, were riddles they could not solve.

As May came in signs of scurvy made themselves only too evident among the members of the crew, and on May 11th the leaders decided that the next day they would have to turn south once more. They started with a light sledge in the morning and

pushed on till noon, when they took their bearings. They had reached latitude 83 degrees 20 minutes 26 seconds north, and were then only 399½ miles from the Pole itself, having beaten all other records of Arctic explorations.

The return to the ship proved exhausting in the extreme. One of the men died and the others were so utterly worn out that hope of reaching the ships was almost abandoned. Lieutenant Parr was the strongest, yet even he was pitiably weak, and when he volunteered to set out alone for the ship in quest of relief few dreamed that he would be able to reach his goal.

They could scarcely accept the evidence of their ears the next morning when the shouts of men's voices came to them in their sleeping bags. The gallant Parr had reached the ship, and the bold fellows who had conquered the "farthest north" were saved when on the brink of death.

Other surveying parties were sent out and on their return the vessels started for home, reaching England without misadventure on November 2, 1876, with the proud consciousness of having surpassed Parry's record of 1827 and approached nearer the pole than any man had before done.

CHAPTER XVI

Nordenskiöld and the Northeast Passage

IN the preceding chapter we have been principally concerned with expeditions to the seas north of America, and with polar researches by the route lying through Smith Sound. Later Arctic ventures have proved that this is the best road to the Pole, and as we now know it is the only one by which the Pole has been reached. But the course of history leads us to other seas, those lying north of Europe and Asia, the seas in which Parry made his famous 1827 record of 82 degrees 45 minutes and which became the seat of important discoveries in the latter part of the nineteenth century.

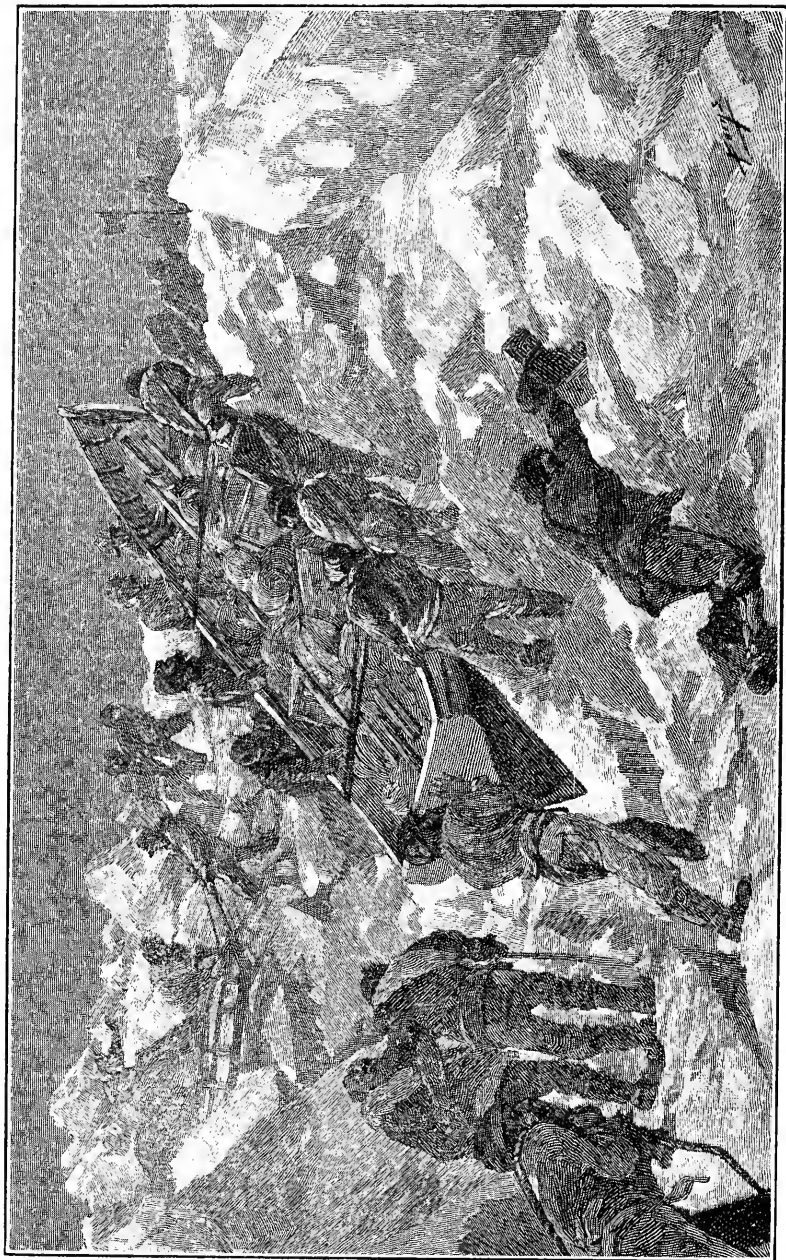
Readers of the chapters of polar history so far given will have perceived that the main objects of explorations were the discovery of a northwest passage from the Atlantic to the Pacific north of America, and the rescue of the unfortunates who were lost in this effort, especially of the Sir John Franklin party. Those which made the discovery of the North Pole their chief object were few in number, the most important being the expeditions of Parry, Hayes, Hall, and Nares.

Meanwhile the problem of the Northeast Passage—that from the Atlantic to the Pacific by way of the seas north of Europe and Asia—remained unsolved. After the long ago Willoughby expedition little attention was paid to it until very recent times, when Baron Nordenskiöld made his famous and successful voyage in that direction. We must, however, briefly consider an unsuccessful attempt in this field preceding that of Nordenskiöld. This was the Austrian expedition of 1872 under Lieutenant Payer.



MACCLINTOCK FINDING SKELETONS OF SIR JOHN FRANKLIN'S MEN

Sir John Franklin's party, numbering one hundred and thirty-five souls, perished on Franklin's third expedition of 1845-47. Captain MacClintock, sent by Lady Franklin to search for proofs of their fate, found these ghastly relics at Erebus Bay, King William Land. Captain Hall, an American, nearly twenty years later, learned from the Eskimo that the skeletons of Franklin's men were scattered over King William Land, that the Eskimo had refused to aid the lost explorers, had stolen everything they had of value, and even suffered their dogs to eat them. It was said, but never proved, that some of Franklin's men had eaten their companions.



[From DeLong's "Voyage of the Jeannette," Houghton-Mifflin Co.]

THE "JEANNETTE'S" CREW DRAGGING THEIR BOATS OVER THE ICE

The men had to go over the same ground four times each way at this stage of their perilous journey. The first trip they brought two sledges forward one mile; at the second trip two more sledges; at the third trip one of the boats, a cutter; at the fourth trip the second cutter and whale boat. One mile progress, therefore, meant seven miles of travel by men and nine miles by the dog sledges. At this point the nearest island off the coast of Siberia was one hundred and twenty miles distant.

This expedition was supported by the enthusiastic approval of the whole Austro-Hungarian empire, great results being looked for from it. Its commander, Lieutenant Payer, was a seaman of proved ability, familiar with the difficulties and dangers of Arctic navigation, he having served in a German expedition of some importance in 1868, and executed a map of its discoveries notable for beauty and accuracy.

It was his intention to round the northeastern point of Nova Zembla and pass eastward to the most northern point of Siberia, where he would pitch his winter camp. He hoped in the following year to continue the voyage to Bering Strait; while, during the spring, sledge-parties would be engaged in exploring the unknown coasts of Wrangell Land, and otherwise advancing the bounds of geographical discovery in that remote and desolate region.

As it proved, the season of 1872 was one of exceptional severity, and ice was encountered in seas which, under more favorable conditions, were generally free from obstruction. Lieutenant Payer, however, bated not one jot of hope, and kept his course to the eastward with resolute intrepidity; hoping to reach Cape Chelyuskin, the farthest north Siberian promontory, where he proposed to pitch his winter-camp.

He was baffled, however, as so many had been baffled before him, by the forces of the Arctic winter. He was compelled to winter among the ice; using his sledges when opportunity offered, for the purpose of exploration, or to obtain fresh provisions.

Both the summers of 1873 and 1874 were spent off the Siberian coast; but though many interesting discoveries were made, Lieutenant Payer did not succeed in effecting a passage through the Icy Sea to Bering Strait. This navigation of the Asiatic mainland remained to be accomplished.

In August, 1873, Payer's ship, the "Tegethof," drifted northward to the highest point yet reached in those eastern seas, land being sighted at 79 degrees 43 minutes north latitude, and the drift

continuing until the eightieth parallel was passed. Here the ice-floe in which the vessel had been immovably fixed for fourteen months was driven upon an island, by the shore of which the long polar winter was passed, the cold becoming so severe that the quicksilver in the thermometer remained frozen for weeks, while the midwinter darkness was intense.

Several sledge journeys were made to explore the new land, which Payer named Franz Josef Land in honor of the Austrian emperor. It lay north of the latitude of Spitzbergen, which it closely approached in area. It was a land of desolation, with mountains 5000 feet in height, the vast cliffs between them being filled with gigantic glaciers. At latitude 81 degrees 37 minutes the explorers reached a territory which they named Crown Prince Rudolf Land, the cliffs of which were covered with thousands of ducks and auks, while seals, bears, hares and foxes abounded. In April, 1874, the coast was followed to 81 degrees 57 minutes north, while land was visible in the distance which seemed to stretch beyond the eighty-third parallel, being the most northern then known upon the globe. This region has since been explored by Leigh Smith and others and found to consist of an archipelago, composed of numerous islands, which are divided into two large masses lying east and west, the group extending between 80 and 83 degrees north. In the autumn of 1874 the expedition returned home, unsuccessful in its main object, but with very important discoveries to its credit.

The work of Payer was in a sense preliminary to that of Baron Nordenskiöld in 1878-79, with which we are here principally concerned. This notable discoverer, Adolf Erik Nordenskiöld by name, was born at Helsingfors, Finland, in 1832, was educated in his native land, and in 1857 became a professor of mineralogy at Stockholm. He took part at various times in no less than eight Arctic expeditions, and was made a baron of Sweden in 1880 after his feat of traversing the Northeast Passage.

The solution of this important geographical problem was the

result of a carefully devised plan, based on the experience and study of its projector, who had devoted years of thought and investigation to the enterprise, collecting information from whalers and other Arctic navigators as well as employing the results of his own voyages. Two of these, made in 1875 and 1876, were to the mouth of the Yenisei River, in Western Siberia, the expense being borne by merchants and landholders having interests in Siberia, to whom a trade-route from Europe to the great Arctic rivers of Asia would have been of much advantage.

The comparative ease with which these two tentative voyages were made led Nordenskiöld to push on with new vigor and enthusiasm towards the great object of his ambition, and he began eagerly to prepare for the great voyage he projected. It involved an expense of about \$100,000, three-fifths of which sum was provided by Mr. Oscar Deikson, of Gothenburg, a merchant who had helped to finance his former voyages, and the remainder by King Oscar II, in behalf of the government of Sweden.

With this aid a screw steamer, the "Vega," was provided, built expressly for use in the Arctic waters and equipped in the most complete manner available for a three years' scientific voyage. The total force of the expedition, embracing botanists, zoologists, meteorologists and crew, numbered only thirty men, Captain Polander, of the Royal Swedish Navy, being second in command and the actual captain of the vessel. There were also some officers of foreign navies, taken on board at the request of their respective governments, among them Lieutenant Bove, of the Italian navy, who had been selected to command a projected Antarctic expedition. It was a picked company throughout, and in this respect no expedition had ever been better equipped. The steamer "Lena" was added as a consort to the "Vega" for most of her course, its goal being the Lena River, on which stream it was to be used for trade purposes.

On the 21st of July, 1878, the company of explorers left the

harbor of Tromsö, Sweden, and sailed for the North Cape, the most northerly point of Europe and the true starting point of the adventurous voyage. Progress was slow on account of adverse winds, the ships heading for the island of Nova Zembla. Here it passed through the Yuger Schar, the strait that lies between Vaygatz Island and the mainland, and entered the great Kara Sea, the vast expanse of Arctic waters which lies between the extreme north of Nova Zembla and Cape Chelyuskin, the northern point of the continent of Asia. At the end of July the several ships of the expedition met in Ehabarook, the appointed rendezvous.

Besides the "Vega" and "Lena" there were two others; the "Frazer" and the "Express," which bore cargoes of iron-ware and bar iron for the Yenisei River. This they were to ascend and to return the same season to Norway. It will suffice to say that this was successfully accomplished, these vessels reaching Hammerfest in September with full cargoes of tallow, wheat, rye and oats, the first shipments ever made by sea from the Yenisei region to the European markets.

Deikson Harbor, near the mouth of the Yenisei, had been entered on the 1st of August, and the "Vega" and "Lena" lay there till the 10th, when the voyage was resumed. For two days all went well, then great masses of floating ice were encountered and heavy fogs made progress slow and dangerous. The fact that the Taimyr Peninsula lies farther to the west than had been supposed added to their difficulties, small islands being encountered where the charts promised open sea.

On the 19th of August the "Vega" came to anchor off Cape Chelyuskin, Asia's northern extremity, a new fact in the history of navigation, and one which was duly celebrated by hoisting flags, firing salutes, and other demonstrations of triumph. The only party to observe these demonstrations was a large white bear, and he plainly did not approve of them. The next day the vessels steamed onward and in a week more the mouth of the Lena River was

reached. Here the little "Lena" parted company with its consort and steamed away up the great Siberian river, reaching Yakutsk, its destination, on the 21st of September.

The region in which they now were, that since known as Nordenskiöld Sea, is that of the New Siberian Islands, a group famous for containing great quantities of mammoth ivory and other remains of the mammoths which once evidently were very numerous in this region. These islands were reached on the 26th. Ice was now forming fast and the "Vega" met with much obstruction, being detained at North Cape for a week. The opportunity was taken to make several land excursions, which led to some interesting discoveries, among them the finding of ruins of habitations like those of the Eskimos, indicating that a similar people had dwelt here in the past.

As the "Vega" went on much trouble and delay were caused by fogs and ice, it being the 227th of September before the east side of Kolintschin Bay was reached and the anchor dropped. They were now in the vicinity of Bering Strait and warm hopes of completing their journey before the season ended were entertained, it being fully expected that the voyage could be resumed on the next day.

But nature decided otherwise, the night proved bitterly cold, and the floes were frozen so firmly together that on the next day the "Vega" found it impossible to break through them. It was hoped that the ice would soon break up, but north winds prevailed, packing heavy masses along the coast, while the growing chill formed new ice with great rapidity. Before November ended all chance of escaping vanished and the explorers were forced to admit that they were frozen in for the winter. Thus, by what Norden-skiöld regarded as a most unfortunate accident, their hopeful expectation of completing the voyage in one season was defeated and nature clasped them in her wintry fetters for another year.

It was certainly unfortunate. Had they reached and left that point one day earlier they would undoubtedly have entered the strait

and reached the Pacific, then little more than a hundred miles away, and escaped ten months of weary detention. As it was, navigation closed more than two weeks before the date at which whaling ships were usually able to leave those waters.

There was nothing, however, to do but submit to the detention, which continued until July 18th of the following year. The time was spent in making meteorological observations of interest and value, in digesting the results of the voyage and in visiting the natives, one village of about two hundred Eskimos being in the vicinity. They were also sufficiently far south as to have a visit from the sun for some time every day.

On July 18th the ice was found to be in motion. The fires were once more lighted under the boilers of the vessel and at 3.30 P. M. the "Vega" glided away from her place of imprisonment. Two days later the Northeast Passage, for which Willoughby began the search 326 years before, was an accomplished fact. Again the Swedish flag was raised and a salute was fired. The point had been reached at which, as Nordenskiöld expressed it, "the Old and the New World seem to shake hands."

The homeward voyage was made by way of Japan, Ceylon and the Suez Canal, the successful navigator being received in Europe with enthusiastic demonstrations and distinguished marks of honor for his signal triumph.

CHAPTER XVII

The Horrors of the "Jeannette" Expedition

DURING the summer of Nordenskiöld's return to civilization from his fortunate expedition, another, destined to a far more unfortunate fate, set out for the same seas, though with a different purpose. This was an American expedition, under the command of Lieutenant George W. DeLong, of the United States Navy, its principal purpose being the discovery of the North Pole and the exploration of the Arctic region. A secondary purpose was to search for Professor Nordenskiöld, who had now been absent a year, his fate unknown. DeLong's instructions to make this search were due to the fact that he proposed to take the Bering Strait route, near which the Swedish navigator might possibly be found.

This route was chosen from reliance on two theories—both of which proved unsound. One was that the Japan current made a way for its warm waters through the strait and might keep open a passage to the pole. The other was that Wrangell Land, instead of being the small island it has since proved, might be of vast, perhaps of continental, area, stretching across the polar space and connecting with Greenland. This was the theory entertained by Dr. Petermann, an eminent German geographer, the validity of which DeLong was to test by following the coast line of this supposed Arctic continent and making sledge expeditions along the ice foot. He proposed to reach Wrangell Land the first season, spend the winter there in exploration, and the next season fight his way as far north as possible.

"If the current takes me to the west," he wrote before start-

ing, "you will hear of me through St. Petersburg; but if it takes me eastward and northward, there is no saying what points I may reach; but I hope to come out through Smith's or Jones' Sound." He further wrote, "It is our intention to attack the Polar regions by the way of Bering Straits, and if our efforts are not crowned with success, we shall have made an attempt in a new direction and examined a hitherto unknown country."

At a later date he thus expressed his intentions:

"If the season is favorable to an advance northward I shall make for Kellett (or Wrangell) Land, and follow along its east coast as far as we can go. If everything is all right with Norden-skiöld, and I hear of it, there will be no necessity for our going to St. Lawrence Bay at all. In this case I shall push through Bering Strait at once and make for the east side of Kellett Land, following it as far as possible, and getting to as high a latitude with the ship as we can before getting into winter quarters. If our progress is uninterrupted for some distance, I shall content myself with one landing, at first on the southeast point of Wrangell or Kellett Land, where we will build a cairn and leave a record of our progress to date. If our progress is interrupted, we shall no doubt make frequent landings on Kellett Land, and build several cairns; but, generally speaking, I shall endeavor to build cairns and leave records every twenty-five nautical miles of our track."

On the 8th of July, 1879, the "Jeannette," DeLong's ship, sailed from San Francisco for the north. It was heavily laden with supplies for a long voyage and had thirty-two persons aboard. A stop was made at St. Michael's, Alaska, where forty dogs were procured, also some Indians who were to act as drivers and hunters. Bering Strait was soon afterwards reached, and on the last day of August it was learned that the "Vega" had passed the winter in Kolintschin Bay and had sailed thence to the south. In proof of this Swedish, Danish and Russian buttons were found in a hut on the shore, while papers were recovered written in Swedish and

having on them the word "Stockholm." This confirmed the story of the natives, for it was sure that no other Swedish vessel had been in that locality, and DeLong, this part of his mission fulfilled, headed the "Jeannette" for Wrangell Land. As it proved, the delay of the "Jeannette" in this search prevented their reaching Wrangell Land before the ice-pack closed in upon them, a fact which led to disastrous results. On September 6th DeLong made in his journal the following entry:

"I am hoping and praying to get the ship into Herald Island (a small island east of Wrangell Land) to make winter quarters. As far as the eye can range is ice, and not only does it look as if it never had broken up, but it also looks as if it never would. Yesterday, I hoped that to-day would make an opening for us into the land; to-day I hope that to-morrow will do it. I suppose a gale of wind would break up the pack, but the pack might break us up. This morning shows some pools of thin ice and water, but as they are disconnected and we cannot jump the ship over obstructions; they are of no use yet to us."

On the 8th he again wrote: "I consider it an exceptional state of the ice that we are having just now, and count upon the September gales to break up the pack, and perhaps open leads to Herald Island. I want the ship to be in condition to move without delay. Besides, I am told that in the latter part of September and early part of October there is experienced in these latitudes quite an Indian summer, and I shall not begin to expect wintering in the pack until this Indian summer is given a chance to liberate us."

The liberation, as is too well known, was not to come. Yet DeLong at this very point did, in the judgment of the Naval Court of Inquiry, the best that could be effected. "Either he had to return to some port to the southward, and pass the winter there in idleness, thus sacrificing all chances of pushing his researches to the northward until the following summer, or else he must endeavor to force the vessel through to Wrangell Island, then erroneously supposed

to be a large continent, to winter there, and prosecute his explorations by sledges. The chances of accomplishing this latter alternative were sufficiently good at the time to justify him in choosing it; and indeed, had he done otherwise, he might fairly have been thought wanting in the high qualities necessary for an explorer."

His efforts, however, proved in vain. Herald Island could not be reached, and till the end of the month the vessel drifted on in the pack, held between the floes as in a vise. It was the same through the month of October; land was seen from time to time, but it could not be reached and the imprisoned vessel and crew drifted helplessly on. The "Jeannette" was caught never to escape. Land seen on the 28th DeLong believed to be the north side of Wrangell Land, but he no longer thought it a continent, writing that "it was either one large island or an archipelago."

A night of great beauty followed the 28th. "The heavens were cloudless, the moon very nearly full and shining brightly, and every star twinkling; the air perfectly calm, and not a sound to break the spell. The ship and her surroundings made a perfect picture. Standing out in bold relief against the blue sky, every rope and spar with a thick coat of snow and frost,—she was simply a beautiful spectacle. The long lines of wire reaching to the tripod and observatory, round frosted lumps here and there where a dog lay asleep; sleds standing on end against the steam-cutter to make a foreground for the ship; surrounded with a bank (rail high) of snow and ice; and in every direction as far as the eye could reach, a confused, irregular ice-field—would have made a picture seldom seen."

During the first half of November the danger increased. Large cracks opened in the floe, huge masses of ice were thrown near the ship, and she was in imminent peril of being crushed. On the 24th she got afloat for the first time for weeks, and in a few days a gale set her adrift; but soon the pack closed in and she was frozen fast again.

Lieutenant Danenhower says: "It was dark, in the long night, and there was no chance of working the pack had it been good judgment to do so. We reckoned that she had drifted at least forty miles with the ice in her immediate vicinity. Previous to this time the ship had stood the pressure in the most remarkable manner. On one occasion, I stood on the deck-house above a sharp tongue of ice that pressed the port side just abaft the forechains, and in the wake of the immense truss that had been strengthened at Mare Island, by the urgent advice of Commodore William H. Shock. The fate of the "Jeannette" was then delicately balanced, and when I saw the immense tongue break and harmlessly underrun the ship I gave heartfelt thanks to Shock's good judgment. She would groan from stem to stern; the cabin-doors were often jammed so that we could not get out in case of an emergency, and the heavy truss was imbedded three-quarters of an inch into the ceiling. The safety of the ship at that time was due entirely to the truss."

Recording the experiences which have been just named, De Long says: "This steady strain on one's mind is fearful. Seemingly we are not secure for a moment, and yet we can take no measures for our security. A crisis may occur at any moment, and we can do nothing but be thankful in the morning that it has not come during the night, and at night that it has not come since morning. Living over a powder mill, waiting for an explosion, would be a similar mode of existence. . . . Sleeping with all my clothes on, and starting up anxiously at every snap or crack in the ice outside, or the ship's frame inside, most effectually prevents my getting a proper kind or amount of rest, and yet I do not see anything else in store for me for some time to come."

Christmas day was passed, drearily enough, and at midnight on the 31st all hands were called together on the quarter-deck to give three cheers for the New Year and for the "Jeannette." But the New Year brought no good fortune in its trail. On the 19th of January there was a loud noise, as if the ship's frame was cracking,

the pressure of the groaning and grinding floes being immense. The ice moved to the eastward, piling up large masses under the ship's stern and breaking the fore-foot so that the ship leaked badly.

Water now began to flow in rapidly, standing three feet deep in the fore-hold, and it was necessary to set the deck pumps at work. This was accomplished, after some hours of severe labor, by the indomitable energy of Mr. Melville, the engineer. The steam pump made forty strokes a minute, pumping out 2,250 gallons to the hour, while by packing with plaster of Paris and ashes the inflow was largely decreased. The pumping went on constantly through the four following months, and as the decreasing coal stock excited apprehension, a windmill pump was arranged by the skill of Melville and his assistants which rendered valuable service.

Meanwhile the ship was drifting about in such a varying way that DeLong lost all faith in theories of Arctic currents, thinking that the movements of the water were the local creation of the varying winds. Lieutenant Danenhower later gave his evidence to the same effect:

"The important point of the drift," he said, "is the fact that the ship traversed an immense area of ocean, at times gyrating in almost perfect circles, her course and the observations of her officers proving that land does not exist in that area, and establishing many facts of value as regards the depth and character of the ocean bed and its temperatures, animal life, etc."

During the period in question they added to their food supply by killing several large bears and an immense walrus, so heavy that thirty of the dogs and four of the men were unable to drag the carcass over the rough ice until cut in two. Its weight was estimated at 2,800 pounds, a valuable prize for dog food.

As for the drifting ship, her gyrations continued, with the discouraging result that observations on the 30th of March placed her in almost the same position she had occupied four months before, a fact that did not well accord with the theory of polar drift.

At the end of May the log was headed "one hundred and ninety miles northwest of Herald Island." Thus after nine months of floating to and fro in the pack-ice she was less than two hundred miles distant from the spot where she had been locked in an icy prison in September, 1879.

Summer was upon her again and strong hopes were now entertained of breaking loose. A fall of rain on the first of June and a rise in the thermometer to 37 degrees gave vitality to their hopes, and they looked eagerly forward to a quick escape. Yet the summer proved inclement, fogs, snows and gales being almost the daily entry in the ship's log. From the crow's nest, at the end of the month, the ship was seen to occupy the center of an island of ice, which was surrounded by a lane of open water a mile distant. But the ice around her continued thick, and during the months of July and August her position remained unchanged, while every effort to liberate the screw proved unsuccessful. DeLong's journal for August 17th contained the following entry:

"Our glorious summer is passing away; it is painful beyond expression to go round the ice in the morning and see no change since the night before, and to look the last thing at night at the same thing you saw in the morning. . . . High as our temperature is (34 degrees), foggy weather a daily occurrence, yet here we are hard and fast, with ponds here and there two or three feet deep, with an occasional hole through to the sea. Does the ice never find an outlet? It has no regular set in any direction north, south, east or west, as far as I can judge, but slowly surges in obedience to wind pressure, and grinds back again to an equilibrium when the pressure ceases. Are there no tides in this ocean? . . . Full moon or new moon, last quarter or first quarter, the ice is as immovable as a rock. . . . It is hard to believe that an impenetrable barrier exists clear up to the Pole, and yet as far as we have gone, we have not seen one speck of land north of Herald Island."

"A Frozen Summer, June-August, 1880," such is the significant title of the ninth chapter in Mrs. DeLong's "Voyage of the 'Jeannette.'" On September 1st the ice gave way sufficiently to allow the ship to rest on an even keel, but she remained immovably locked in the floe, and after sawing through the ice under the fore-foot with the hope of setting her afloat, the water came in so freely that this work had to be stopped. It was evident that the stern was badly broken, and the prospect of keeping the ship afloat if open water were reached became very questionable.

Before the end of September it was evident that the "Jeannette" could not be freed and preparations were made for spending a second winter in the ice. It was necessary to make ready to abandon the ship suddenly in case of any disaster, but they preferred keeping in its shelter to trusting themselves to the ice, DeLong writing that he could "conceive no greater forlorn hope than to attempt to reach Siberia over the ice with a winter's cold sapping one's life at every step." If he had had before him the experiences of later voyagers, a different fate might have awaited him.

There was no lack in the food supply, several more bears having been shot. And the crew continued in good health with the exception of Lieutenant Danenhower, who had been under the surgeon's care for nine months in consequence of a serious trouble with his eyes. Otherwise he was well, and scurvy, the bane of polar adventure, had not shown itself in any instance.

The situation was not without its alleviations. DeLong writes thus of the beauty of an Arctic night:

"October 16th. I have heretofore made several attempts to describe the beauty of these Arctic winter nights, but have found my powers too feeble to do the subject justice. They must be seen to be appreciated. It is so hard to make a descriptive picture of moon, stars, ice and ship, and unluckily photography cannot come into play in this temperature to supply a real picture. Imagine a moon nearly

full, a cloudless sky, brilliant stars, a pure white waste of snow-covered ice, which seems firm and crisp under your feet, a ship standing out in bold relief, every rope and thread plainly visible, and enormously enlarged by accumulations of fluffy and down-like frost feathers; and you have a crude picture of the scene. But to fill in and properly understand the situation, one must experience the majestic and awful silence which generally prevails on these occasions, and causes one to feel how trifling and insignificant he is in comparison with such grand works in nature. The brightness is wonderful. The reflection of moonlight from bright ice-spots makes brilliant efforts, and should a stray piece of tin be near you, it seems to have the light of the dazzling gem. A window in the deck-house looks like a calcium light when the moonlight strikes it at the proper angle, and makes the feeble light from an oil-lamp within, seem ridiculous when the angle is changed. Standing one hundred yards away from the ship one has a scene of the grandest, wildest and most awful beauty."

And the Arctic prisoners succeeded in keeping up their spirits, celebrating Christmas and New Year with some of the home enthusiasm, and enjoying the amusements necessary for health in the polar solitudes. Yet with all they could do to make the time pass cheerily, the monotony was depressing and the coming of spring was hailed with gladness.

May came and with it a hopeful sign. On the 16th of May land was sighted, the first they had seen for fourteen long months. It was an island, a small one apparently, but as the commander wrote: "Fourteen months without anything to look at but ice and sky, and twenty months drifting in the pack, will make a little mass of volcanic rock like *our island* as pleasing to the eye as an oasis in the desert."

On the 24th more land was seen, while large lanes of water opened in the ice, and on the 31st Engineer Melville with several companions set out with a dog team to visit this second island, then

fifteen or twenty miles away. They christened it Henrietta Island, the first seen having been named Jeannette Island. The journey proved a severe and dangerous one, but it was a welcome break in their monotonous life. DeLong wrote of it: "Thank God, we have at last landed upon a newly-discovered part of this earth, and a perilous journey (Melville's) has been accomplished without disaster. It was a great risk, but it has resulted in some advantage."

The discovery of these islands, in about latitude 77 degrees north, longitude 158 degrees east, was but a passing moment of cheer in their life, the prelude to disasters far greater than they had yet experienced, a momentary ringing up of the curtain upon a scene of life to let it descend upon a scene of death. The time was at hand for the ship to be released from her two winters of imprisonment and to enter upon an imprisonment more hopeless still, that of the ocean depths. Scarcely had the excursionists returned from the new-named islands when the ice around the ship began to break up into huge masses, leads opening and closing with force enough to grind her to powder had she not still remained in the center of a small island of ice. This protected her sides, but her bottom was continually hammered by ice cakes floating below.

On Sunday, June 12th, at midnight, the floe in which she lay split in a line with her keel, and she suddenly righted, the concussion sending all hands in alarm to the deck. As the day went on the ice began pressing upon her sides, and at 3.40 P. M. it was reported as having broken through into the starboard coal bunkers. She was keeled over more than 20 degrees to starboard. At four o'clock she lay perfectly quiet, but with her bows lifted high into the air, sufficiently to show the injury to her forefoot made on January 9, 1880. It was evident that she was hopelessly wounded and that no effort could keep her afloat when the ice left her free.

Mr. Melville went on the floe to take a final photograph of the hapless "Jeannette," and on his return heard the order given to prepare to leave the vessel by taking chronometers, rifles, ammunition and other articles to the floe. Lieutenant Chipp was sick in

bed, but was notified to come on deck, and the captain carefully supervised the operations, quieting down all haste or consternation among the men and moving about the deck in a manner as unconcerned as if they were in the midst of an ordinary operation. The necessary articles, including the personal effects of officers and men, were safely landed on the ice, but there was difficulty in getting out a barrel of lime-juice, an article necessary to prevent scurvy on the proposed march. To rescue it seaman Starr waded into the forward store-room at the risk of his life.

By eleven o'clock that night the situation had grown perilous in the extreme. The ship's water-ways had been broken in and the iron-work around the smoke-stack buckled up and its rivets sheared off, so that it was supported only by the guys. The order was now given to leave the ship, three boats being lowered—the first and second cutters and the first whale-boat—while the ship's company of thirty-three landed on the floe, where they encamped in six tents.

Here they were far from safe. Shortly after the watch was set and the order given to turn in, and as they were getting into their sleeping bags, the ice cracked under Captain DeLong's tent, and it became necessary to move the stores and boats to another part of the floe. Erickson, one of the captain's party, would have gone into the water but for the fact that the Mackintosh blanket on the middle of which he was lying was held up by the weight of others who lay on its sides.

At 4 A. M., June 3d, a loud cry came from the watch: "There she goes; hurry up and look; the last sight you will have of the old 'Jeannette'!" The ice so far had held together sufficiently to prevent her sinking. It now opened and down went the gallant ship, with her colors flying at the masthead, the ice stripping her yards upwards as she sank. A visit on the next morning to the spot where she was last seen, showed nothing afloat but a cabin chair, a signal chest, and some smaller articles.

The watery grave of the poor "Jeannette" lay in latitude 77

degrees 14 minutes 57 seconds north, longitude 154 degrees 58 minutes 45 seconds east, in a depth of thirty-eight fathoms.

Hopeless was now the situation of Captain DeLong and his officers and crew, fearful the fate that faced them. At the dread distance of three hundred and fifty miles from the Siberian coast, with long and toilsome marches over rough hummocks before them, and a desolate coast to land upon, and with a subsequent journey of over fifteen hundred miles to Yakutsk, the nearest Russian city, the outlook was sadly discouraging. Some of the men also were sick, suffering from lead poisoning due to the tins of canned goods, while Lieutenant Chipp had just risen from a sick bed and Danenhower had long been an invalid from the condition of his eyes.

Yet with fortitude and hope they faced the situation before them. They had three good boats, had sledges, clothing and ammunition, and a large supply of provisions, including nearly five thousand pounds of American pemmican in canisters, about fifteen hundred pounds of other canned provisions and an equal weight of bread, while their guns could be depended upon to bring them an occasional supply of fresh meat.

On June 16th the order was given that a start should be made at 6 P. M. on the following day, a night march being decided on to avoid blindness from the intense glare of the sunlight on the ice. Dinner was to be at midnight, supper at 6 A. M., and sleep during the hours of day. The day's delay was made to give the sick a chance to recuperate. Before setting out DeLong prepared a record of the loss of the "Jeannette" and the southward start, sewing it up in a piece of black rubber enclosed within an empty boat breaker and trusting it to the waves. It was their purpose, he said, to seek to reach the New Siberian Islands and from them make their way by boats to the coast of Siberia.

Yet the work before them was slow and toilsome. Their boats and provision sledges had to be drawn over the hummocky ice, each officer and man being provided with a harness fashioned

to go across the chest and one shoulder and attached to the sled by a lanyard. It was a terrible strain, through softened snow knee-deep and ice rough and full of fissures, over which the boats had to be jumped or ferried, while the sledges were dragged over large hummocks.

Taking the first cutter to a point marked by ice-pilot Dunbar, they had to return several times for the others, so that it took three hours to make the first mile and a half, and in the succeeding days a mile or mile and a half a day was the limit. The men had to go over the road thirteen times—seven times drawing loads and six times empty handed—so that twenty-six miles of travel were necessary to make an advance of two. And so many of them were invalided that twenty-one had to do the work for the whole.

This was bad enough, but worse was known to the captain and kept secret by him. Observations taken at the end of a week showed him that the ice drift had more than robbed them of the fruits of their labor. They had drifted twenty-seven miles to the northwest farther than they had marched to the south! Near the end of June the snow melted and traveling grew easier, their thirteen daily journeys over the same ground being reduced to seven. But the pools of thaw water kept their feet constantly wet.

On the 11th of July their eyes were gladdened by the sight of land in the distance, but the steady ice-drift made their progress so slow that it was the 28th before they were able to set foot on it. Its shore was so steep that a landing proved hard to make, yet by 7 P. M. everybody was on shore, the silk flag was unfurled and possession was taken in the name of the President of the United States. The island was christened Bennett Island, in honor of Mr. J. G. Bennett, the patron of the expedition.

The ship's company encamped here for several days, glad of a period of rest and a change of diet, sea-birds being numerous on the small volcanic island and easily caught. But a surfeit of bird meat brought on sickness and they soon had to go back to pem-

mican. They left the island on August 6th and on the 20th reached Thaddeus Island, one of the New Siberian group, among which they were imprisoned by the ice for nearly ten days.

Navigable water was found at the end of this time and the party distributed themselves among the three boats, Captain DeLong taking command of the first cutter, Lieutenant Chipp of the second, and Engineer Melville of the whale boat. The second cutter was a bad sea-boat and had little room for provisions, the first cutter having the greatest capacity of the three and being an excellent sea-boat. The whale boat was also well built and strong.

Onward with hope the castaways now went, knowing that the coast of Asia was not far distant. On the 10th of September it came in sight, about twenty miles away, and on the 11th a landing was made on the small Semenovski Island and hunting parties sent out. An old hut was found there and footprints made by a white man's boot—a very encouraging indication.

But their good fortune was quickly at an end. Leaving the island on the 12th, they soon found themselves in the clasp of a gale, which grew so severe as to set all hands in the whale-boat to pumping and baling out water. The boats kept close together until about 7 P. M., when the gale increased in force and they were separated, never to meet again. Their destiny differed. The first cutter reached land, but only to leave its party to the sad fate of death by cold and starvation. The second cutter vanished, leaving no record of its fate, it having probably swamped in the stormy sea. Those in the whale-boat alone escaped death, reaching shore by the successful use of a drag or sea-anchor and keeping the boat afloat until land was reached by incessant baling.

We shall end here this chapter of the adventures of the hapless ship's company of the "Jeannette," leaving the record of the adventures of those who reached shore for the following chapter, in which the story of the escape of Melville and his boat's crew will be described, with his subsequent search for the fated DeLong and his companions.

CHAPTER XVIII

Melville Finds the Remains of the DeLong Party

WE have followed the unfortunate ship's company of the "Jeannette" from their start at San Francisco to the time they were frozen in the pack ice off Herald Island; thence through their long and wearisome drift in this sea of ice for two winters and one summer until the crushed and hopelessly wounded "Jeannette" sank in the Arctic sea; followed by their brave and disheartening journey over the ice to the far-off Siberian coast. Off this coast, as has been stated, the three boats containing the hapless wanderers parted in a gale and never came together again. Of their inmates, only those of the whale-boat, commanded by Engineer Melville, survived the perils of sea and shore, death claiming as victims, with two exceptions, all those on the other boats. It is our purpose here, therefore, to follow the fortunes of Melville and his comrades and tell the story of their return to safety and of their subsequent search through the Siberian wilds for their lost companions.

George Wallace Melville bears a record worthy of some brief mention before we describe this crucial portion of his career. Born in New York City in 1841, he was educated in the Brooklyn Polytechnic School and entered the naval service of the United States in 1861 as third assistant engineer. As such he took an active part in the work of the navy during the Civil War, frequently volunteering for dangerous and desperate service. He became chief engineer in 1881, and as such aided greatly in the building up of the new United States Navy, in which he became engineer-in-chief in 1887. He was given the rank of rear admiral in 1899.

Mr. Melville strongly interested himself in polar research and has taken part in three separate expeditions to the Arctic seas. Of these the most important is that in connection with the "Jeannette" enterprise, which he joined as engineer. His heroic conduct in this unlucky voyage was fully recognized in this country and was rewarded by Congress in a special act in 1890, by which he was advanced one grade in the service. It is the detail of this part of his career with which we are here concerned.

Melville's comrades in the whale-boat cruise were nine in number, comprising Lieutenant Danenhower and eight of the crew, among the latter being the Chinese steward and one of the Alaska Indians, named Aneguin. The whale-boat was twenty-five feet four inches long and strongly put together. Like the cutters, it was clinker-built, copper-fastened, and with inside lining. And like the others, its draught was deep, this being due to the heavy oak keel pieces put upon the boats to strengthen them for the wearing work of hauling over the ice.

The severe gale which had separated the boats off the Siberian coast gave exhausting labor to Engineer Melville's crew, who were kept busy pumping or baling out the water which poured in from the combing waves. The pocket prismatic compass they had was here of no avail, and they had to steer by the sun or moon, in which work the professional skill of Lieutenant Danenhower, still on the sick list, was of great service. He carried the chronometer and chart and could lay the proper course of the boat very closely by the bearings of the sun. By this means he was fortunate in bringing the wave-tossed craft safely to land at one of the eastern mouths of the Lena River on September 15th, three days after they had left Semenovski Island.

Favoring fortune had brought them ashore in an inhabited region, the river was still open, and a Tungus Indian whom they met and engaged as pilot took them in safety up its course for the following eleven days, at the end of which a village was reached.

Here they found several Russian exiles, who took great interest in the arrival of the castaways, the coming of whom was a welcome break in the dreary monotony of their existence. One of them, Kopelloff by name, served them a good turn by teaching Lieutenant Danenhower a number of Russian phrases, likely to prove very useful in their later intercourse with the Siberian officials.

The young ice was now forming in the river, rendering further progress by the boat unavailable, and they were detained until it should be thick enough for sledding. But tidings of their arrival were sent ahead, another of the exiles, Koosmah Gernymahoff, with the chief of the village, going forward to Bulem, the most northern Russian station in Siberia, to acquaint the authorities there with the fact.

On the 17th of October Danenhower set out with a dog team on a search for the two other boats, but the surface conditions proved unfavorable for the work, and he was unable to proceed far in any direction. The young ice which covered the broad-channel lower river was too thick to permit the passage of boats and too weak to bear sledges, and ignorance of the language of the natives prevented any useful intercourse, so that they were unable to learn the resources of the vicinity as to reindeer or dog teams.

The messengers who had been sent south to Bulem returned on the 29th with the report that they had met natives with deer sleds, these bringing with them two rescued seamen of De Long's party, Nindemann and Noros, whom they were taking to Bulem. They brought also a note given them by these sailors in which it was stated that the captain's party had reached land, but were starving and in need of immediate assistance.

This news, communicated by Koosmah to Engineer Melville, roused him to the most earnest endeavors, active efforts being at once made to reach and rescue Captain DeLong's party. Danenhower was left in charge of the whale-boat crew with orders to conduct them as soon as possible to Bulem, while Melville set out

with a native guide and a dog team in search of the castaways. On November 1st he received from the commandant at Bulem a good supply of bread, deer-meat and tea, and also a paper written by the two rescued seamen and addressed to the American Minister at St. Petersburg. These were forwarded by the lieutenant to Melville, and he quickly followed his messenger, overtaking Melville at the first deer station.

We may finish here the story of Lieutenant Danenhower, who was now directed by Melville to proceed to Yakutsk, twelve hundred miles away. This place he reached on December 17th, and received there three despatches from the Secretary of the Navy. In return he advised the Secretary of the state of affairs and requested permission to search for Lieutenant Chipp's party. This permission was granted, but was afterwards revoked on account of the condition of his health, and he was directed to return to the United States. He reached there in February, 1882.

Before proceeding with the account of Melville's search, the story of Nindemann and Noros, as related to him by them, must be told. On the 9th of October DeLong had sent them out in advance, saying to Nindemann: "I think you have to go only twelve miles to a settlement called Kumarksurka, and you and Noros can find it in three days, or, at the longest, four. Do the best you can; if you find assistance come back as quick as possible; and if you do not, you are as well off as we are."

Starting off with a cheer from their comrades and a copy of the captain's chart, the two men pushed forward with all possible speed. On the first day they dined on a ptarmigan, killed by them; on the second their food consisted of a bootsole soaked in water and burned to a crust, with tea made from the Arctic willow. The remaining bootsole served them on the 11th, but on the 12th they were more fortunate, for, while gathering some drift-wood, Noros found beneath it two fishes and Nindemann caught a lemming. During the next eight days they had little to eat beyond portions of a pair

of sealskin pants, soaked and burned to a crust, but on the 20th they found in a hut fishes enough to keep them alive for several days. But their diet had induced dysentery, from which they were growing very weak.

While resting in an abandoned hut on the 22d they had the good fortune, looking through a crack in the hut, to see a native, to whom they lost no time in making their presence known. The native, whose sympathy was aroused by their condition, brought some others that evening, and putting the exhausted and half-starved men on their deer sleds, they drove with them to their tents, which were reached at midnight. Here they were given food. Their rescuers proceeded with them the next day until they fortunately met a Russian, to whom they succeeded in making known their situation and the fact that they wished to be taken to Bulem. They reached the place on the 29th.

On the 3d of November the two men heard the door of their hut in Bulem opened and to their glad ears came a familiar voice speaking American words. It was Engineer Melville, who exclaimed, "Noros, are you alive?"

The meeting was a joyful one, and the rescued seamen eagerly told their story, Melville making a chart of the route described by them and marking on it the location of the huts they had found, as a guide in his intended immediate search for DeLong and his party. The privations of the two men, however, gave him gloomy anticipations as to the fate of those they had left, the seamen themselves being very sick from exhaustion and the dysentery caused by their eating decayed fish. The very great probability was that those left behind had perished.

On November 5th Melville set out on his search of the Lena delta, taking two dog teams, two natives and a ten days' supply of food, and following the route he had charted from the account of the two seamen. He had no difficulty in finding the route, some of the huts described by them being reached, while from several native

hunters he received some of the records left by Captain DeLong. These records indicated where he should look for the log-books, chronometers and other articles that had been abandoned, and these he quickly found in a cache erected on the ocean shore, its location marked by a tall flagstaff.

For three weeks afterwards the search was diligently continued, not without much suffering on the part of the searching party, the weather being very severe, but no traces of the lost men were found. The natives knew nothing of them, and it became certain that they had ceased to live, in view of the fact that their food supply had been practically exhausted when the two seamen left them. Further search, with the hope of finding any of them alive, was plainly useless. That they had all perished was beyond doubt, and Melville sadly returned, having done all that it was possible to do in the wintry conditions then prevailing.

He brought the relics he had found to Bulem, and from there proceeded with them to Yakutsk, the nearest place where the supplies needed and the requisite orders from the Russian authorities to its subordinates could be procured. The logs and papers were placed in charge of Lieutenant Danenhower, to be taken to the United States, and under orders telegraphed from the Navy Department Melville prepared for a search for the remains of his late companions.

Setting out again in the midwinter season, he proceeded north, and, accompanied by seamen Nindemann and Bartlett, the latter having picked up some knowledge of Russian speech, he resumed his search. It was March 16th when he first came upon the track of his lost companions. On that date he found the hut in which they had slept before crossing the river. On the 23d he reached the location of their sad death.

The resting place of the unfortunate voyagers was indicated by four poles lashed together and projecting from the deep snow drift, while the muzzle of a Remington rifle stood eight inches above

Tuesday October 25th

135th day.

Wednesday October 26th

136th day.

Thursday October 27th

137th day. Iverson broken down

Friday October 28th

138th day. Iverson died during early morning.

Saturday Oct 29.

139th day. Bressler died during night

Sunday Oct 30 -

140th day. Boyd & Gertz died during night. Mr Collins dying

FAC-SIMILE OF LAST PAGE OF JOURNAL OF LIEUTENANT-COMMANDER GEO. W. DELONG

[From DeLong's "Voyage of the Jeannette," Houghton-Mifflin Co.]

In the six days covered by this historic and awe-inspiring document, which was found by Melville, the deaths of four men are recorded. Another was dying, and but three remained. DeLong, Dr. Ambler and Ah Sam were found dead a thousand yards from the rest of the bodies. The laconic manuscript record of this very extremity of terrible suffering gives only a faint idea of the frightful privations which these men endured. Not less impressive is the fact that the commander of the expedition faithfully recorded the performance of his work until, perhaps, only a few hours before he himself, too, was frozen into an endless sleep. Nothing can more vividly exemplify the courage of the men who have braved the awful perils of the Polar regions than such an insight as this page gives. More than five hundred Arctic expeditions have been made. All have endured discomfort, most acute suffering, and many have laid down their lives in efforts to reveal to the world the mystery and terrors of the Polar ice.

the snow, its strap hitched over the poles. A few hundred yards further on he came upon the remains so long sought, the dead bodies of Captain DeLong and Surgeon Ambler. With them was that of Ah Sam, the Chinese cook. By the side of DeLong lay his notebook with the last feebly indicated words he had been able to write, while under the poles were found the books and records which he had carried with him to his sad end. The bodies of the others were also found, with the exception of those of Erickson, one of the seamen, and Alexai, an Indian, which were sought for in vain. The journal afterwards showed that they had died and been buried in the river.

The natives who accompanied Melville could with difficulty be induced to aid in getting the bodies out of the snow. It was necessary to pry them up with sticks of wood, as they were frozen to the ground. One arm of Captain DeLong had been seen lifted above the snow, but his body was covered.

After digging in the snow and finding a few small objects and taking from the bodies all articles found upon them—except a small bronze crucifix found upon the person of Mr. Collins, which Melville ordered to be buried with him—the preparations for return were made. All the bodies were carried over the mountain to the southward of Mat-Vai, where a tomb was dug on a high bluff, and the bodies reverently interred. They were laid side by side in regular order, as their names had been written on the vertical shaft of a cross erected over the tomb.

The tomb was covered with seven-inch plank and a pyramid of large stones built over it, arrangements being subsequently made to have it covered with a deep layer of earth to prevent the possibility of the sun thawing the bodies below. Above this pyramid rose the cross, twenty-two feet high and with an arm twelve feet in length. Standing, as the cairn and cross did, on an eminence, they formed conspicuous objects, which could be seen at a distance of twenty miles. On the cross was the following inscription:

"In memory of twelve of the officers and men of the Arctic steamer "Jeannette," who died of starvation in the Lena Delta, October, 1881—Lieutenant G. W. DeLong, Dr. J. M. Ambler, J. J. Collins, W. Lee, A. Görtz, A. Dressler, H. H. Erickson. G. W. Boyd, N. Iverson, H. H. Kaack, Alexai, Ah Sam."

Melville made a subsequent search for the party of the second cutter, commanded by Lieutenant Chipp, but not a trace of them could be discovered, though the search was very thorough. And though the first cutter was found, frozen in the ice and badly stove, there was no trace of Chipp's boat. At a later date other searching parties were sent out, but with like negative result, and it became evident that the second cutter had gone down in the gale, with all on board. It may further be stated that the bodies of DeLong and his men were subsequently taken from their lonely tomb in the Siberian wilds and brought to the United States, where they were reinterred with reverent and appropriate ceremonies.

This story of the fate of the "Jeannette" and of Captain DeLong and most of his officers and crew can justly be completed only by suitable extracts from the captain's journal, in which the details of their sufferings and wanderings are given. Our extracts begin with their losing sight of the whale-boat, as follows:

"At 9 P. M. September 12th, lost sight of whale-boat ahead; at 10 P. M. lost sight of second cutter astern; wind freshening to a gale. Step of mast carried away; lowered sail and rode to sea anchor; very heavy sea, and hard squalls. Barometer falling rapidly.

"13th, very heavy northeast gale . . . At 8 P. M. set a jury sail made of a sled cover, and kept the boat away to the westward before the sea;—17th, grounded at a few hundred yards, landed at 8 P. M.; dark and snow storm, but Collins had a good fire going; at 10.20 had landed everything, except boat oars, mast, sled, and alcohol breakers;—18th, had fires going all the time to dry our clothes, we must look our situation in the face, and prepare to walk to a settlement.

"September 19th, ordered preparations to be made for leaving this place, and as a beginning, all sleeping bags are to be left behind. Left in instrument box a record, portions of which read thus:

"LENA DELTA, September 19, 1881.

"Landed here on the evening of the 17th, and will proceed this afternoon to try and reach, with God's help, a settlement, the nearest of which I believe is ninety-five miles distant. We are all well, have four days' provisions, arms and ammunition, and are carrying with us only ship's books and papers, with blankets, tents, and some medicines, therefore our chances of getting through seem good.

. . . At 2.45 went ahead, and at 4.30 stopped and camped. Loads too heavy—men used up—Lee groaning and complaining, Erickson, Boyd, and Sam, hobbling. Three rests of fifteen minutes each of no use. Road bad. Breaking through thin crust; occasionally up to the knees. Sent Nindemann back with Alexai and Dressler to deposit log-books. . . . Every one of us seems to have lost all feeling in his toes, and some of us even half way up the feet. That terrible week in the boat has done us great injury; opened our last can of pemmican, and so cut it that it must suffice for four days' food, then we are at the end of our provisions and must eat the dog (the last of the forty) unless Providence sends something in our way. When the dog is eaten ——? I was much impressed and derive great encouragement from an accident of last Sunday. Our Bible got soaking wet, and I had to read the Epistle and Gospel from my prayer-book. According to my rough calculation it must have been the fifteenth Sunday after Trinity, and the Gospel contained some promises which seemed peculiarly adapted to our condition. (The passage is in Matthew v. 24.)

"September 21st, at 3.30, came to a bend in the river making south, and to our surprise two huts, one seemingly new. At 9 P. M. a knock outside the hut was heard and Alexai said, 'Captain, we have got two reindeer,' and in he came bearing a hind quarter of meat. September 24th, commenced preparations for departure from

the hut at seven o'clock. . . . At 10 P. M. made a rough bed of a few logs! wrapped our blankets around us and sought a sleep that did not come; 27th, made tea at daylight, and at 5.05 had our breakfast—four-fourteenths of a pound of pemmican. . . . At 9.45 five men arrived in camp, bringing a fine buck. Saved again!! September 30th, one hundred and tenth day from leaving the ship, Erickson is no better, and it is a foregone conclusion that he must lose four of the toes of his right foot, and one of his left. The doctor commenced slicing away the flesh after breakfast, fortunately without pain to the patient, for the forward part of the foot is dead: but it was a heart-rending sight to me, the cutting away of bones and flesh of a man whom I hoped to return sound and whole to his friends. October 1st, the doctor resumed the cutting of poor Erickson's toes this morning, only one toe left now. And where are we? I think at the beginning of the Lena River at last. My chart is simply useless. Left a record in the hut that we are proceeding to cross to the west side to reach some settlement on the Lena River.

"October 3d, nothing remains but the dog. I therefore ordered him killed and dressed by Iverson, and soon after a kind of stew made of such parts as could not be carried, of which everybody, except the doctor and myself, eagerly partook, to us it was a nauseating mess. . . . Erickson soon became delirious, and his talking was a horrible accompaniment to the wretchedness of our surroundings. During the night got his gloves off; his hands were frozen. At 8 A. M. got Erickson (quite unconscious) and lashed on the sled under the cover of a hut, made a fire and got warm. . . . Half a pound of dog was fried for each one, and a cup of tea given, and that constituted our day's food. At 8.45 A. M., our messmate, Erickson, departed this life. October 6th, as to burying him, I cannot dig a grave, the ground is frozen, and I have nothing to dig with. There is nothing to do but to bury him in the river. Sewed him up in the flaps of the tent, and covered him with my flag. Got tea ready, and with one-half ounce alcohol, we will try to make out to

bury him. But we are all so weak that I do not see how we are going to move.

"At 12.40 P. M. read the burial service, and carried our departed shipmate's body down to the river, where, a hole having been cut in the ice, he was buried; three volleys from our two Remingtons being fired over him as a funeral honor.

"A board was prepared with this cut on it:

In Memory,
H. H. ERICKSON,
October 6, 1881.
U. S. S. Jeannette.

And this will be stuck in the river bank abreast his grave. His clothing was divided up among his messmates. Iverson has his Bible and a lock of his hair. Kaack has a lock of his hair. . . . Supper, 5 P. M., half pound of dog meat and tea. October 9th, sent Nindemann and Noros ahead for relief; they carry their blankets, one rifle, forty pounds ammunition, two ounces alcohol. . . . Under way again at 10.30, had for dinner one ounce of alcohol; Alexai shot three ptarmigan. Find canoe; lay our heads on it and go to sleep.

"10th, eat deer-skin scraps. . . . Ahead again till eleven. At three halted, used up. Crawled into a hole on the bank. Nothing for supper, except a spoonful of glycerine. 17th, Alexai died, covered him with ensign, and laid him in a crib. 21st, one hundred and thirty-first day, Kaack was found dead at midnight. Too weak to carry the bodies out on the ice; the doctor, Collins, and I carried them around the corner out of sight. Then my eye closed up. Sunday, October 23d, one hundred and thirty-third day—everybody pretty weak—slept or rested all day, managed to get enough wood in before dark. Read part of divine service. Suffering in our feet. No foot gear.

"Monday, October 24th, one hundred and thirty-fourth day. A hard night.

"Tuesday, October 25th, one hundred and thirty-fifth day. No record.

"Wednesday, October 26th, one hundred and thirty-sixth day. No record.

"Thursday, October 27th, one hundred and thirty-seventh day. Iverson broke down.

"Friday, October 28th, one hundred and thirty-eighth day. Iverson died during early morning.

"Saturday, October 29th, one hundred and thirty-ninth day. Dressler died during the night.

"Sunday, October 30th, one hundred and fortieth day. Boyd and Görtz died during the night. Mr. Collins dying."

With this entry of death the doleful record closes. The captain, surgeon, and the last one of the crew must have quickly followed their comrades to the grave. Thus ends this saddest of all Arctic journals.

CHAPTER XIX

Greely's Arctic Winter of Starvation

AMONG the many disasters to which Arctic expeditions have been exposed, there have been three instances of extraordinary misfortune and suffering, three cases in which starvation and death claimed victims in numbers, the three most terrible visitations of calamity in all Arctic history. With two of these, the frightful misfortunes of the Franklin and the De Long expeditions, we have dealt. The third remains to be described, that of the heroic Greely, in its way one of the worst of the three, since its record of starvation extended through a whole winter, to close with death for most of the party in the end and a sensational rescue of the few survivors when they had gone through all the horrors of death. The narration of this record of disaster and suffering is given in the present chapter.

The origin of the Greely expedition was the following: An international conference had decided on a plan to establish a chain of stations around the border of the Arctic Circle for the purpose of exploring, of collecting specimens in natural history, and of taking meteorological, magnetic and other observations for the benefit of science. Of these stations the United States established two, one in Alaska and one in Grinnell Land. It is the latter with which we are concerned.

Lieutenant Adolphus W. Greely, of the United States Army, was chosen as the leader of the Grinnell Land expedition, which consisted of four officers and twenty-one men, and left New York in the early summer of 1881 in the "Proteus," a steamer chartered for the purpose. Congress had voted \$25,000 for the expenses of

the expedition, which was to proceed to Lady Franklin Bay, on the shores of Grinnell Land, and from there send out exploring parties, by dog sledge and steam launch, as far north as possible. A ship was to be sent each year with supplies, and if these should fail to reach him, Greely was instructed to begin a retreat not later than September 1, 1883.

The expedition left St. John's, Newfoundland, on the 7th of July, stops being made at various points on the Greenland coast to obtain dogs and complete the preparations for a long sojourn in a land of desolation. At Upernavik a number of dogs were obtained, and two Eskimos, Jens and Frederick, were taken on board as drivers. The season was unusually mild, and they were able to make excellent progress through the unimpeded water. On the way they stopped at Cary Islands and examined the records left there by Sir George Nares in 1875, and which had been examined once before by Sir Allen Young, in 1876. The sea was full of white whales, narwhals, and grampus. The latter has the reputation of being a voracious feeder, one authority stating that a dead grampus had been found, choked by a seal he had attempted to swallow, although, when he was opened, his stomach was found to contain no fewer than thirteen porpoises and fourteen seals.

On August 4th the "Proteus," for the first time during the voyage, was stopped by the ice. Being built specially for navigating the ice-covered seas, she was very powerful in the bows, which were further embellished by a strong iron prow. Thus she was able to force her way through the ice which would have been impassable to a lighter craft. Her method, when she was faced by moderately thin ice which was yet thick enough to stop her ordinary progress, was to steam astern for a couple of hundred yards and then rush full speed at the ice. The strength of the iron prow and the force of her powerful engines drove her into the floe, but the operation was one that required great care. As she approached the floe, the crew, running from one side of the deck to the other, caused her to

roll as she struck, the engines being reversed directly her prow penetrated the ice, so as to prevent her wedging herself in. This exciting operation was repeated several times when she met the floe in Lady Franklin Bay, and only by its means was she able to ram her way through and reach the destination of the expedition.

A site for landing was selected on the north of Discovery Bay, where the "Discovery," of the Nares expedition, had wintered in 1876. Proceeding a little distance from the spot where the "Discovery" winter quarters had been erected, a suitable situation was marked out for "Fort Conger," which was to form the base of the operations pending the time when the relief ship was due to take the expedition home again.

During the following week every one was hard at work erecting the frame house which was to form their home during the next two years, unloading stores and other articles belonging to the expedition, arranging the heavy casks and cases of imperishable provisions near the house, and exploring and hunting over the surrounding country.

On August 18th, all the stores belonging to the party were landed from the "Proteus," and that vessel got up steam and bade farewell. The men of the party worked with such a will that they had their house built, the recording instruments erected in proper localities, the provisions stacked, and everything in order sufficiently early to permit them to carry out some surveys while the weather was yet mild enough for sledge traveling. Attention was also given to obtaining as much game as possible, and by the time that the temperature was cold enough to warrant their going into winter quarters, they had obtained for their larder twenty-six musk oxen and ten ducks, besides hare, seal, and ptarmigan, in all 6,000 pounds of fresh meat for their own food, and an equal amount for the dogs.

In the middle of September they were visited by a large pack of wolves. These were first discovered prowling over the ice on the harbor in front of the encampment, and, fearing the loss of some

of the dogs, as well as provisions, a hunting party went out to shoot them. But the wolves were too cunning, keeping out of range until the men were tired out. They were frequently fired at, but none fell, although this might not have been due to bad marksmanship. The Arctic wolves, as was discovered later, are perhaps the most tenacious of life of any of the northern animals.

One was seen, a day or so later, within a hundred yards of the house. It was immediately fired at, and rolled over with a bullet through the body; but before the marksman could get over to where it lay, the apparently dead creature scrambled to its feet and made off, bleeding profusely. The trail left by the blood was distinctly visible on the snow, although the wolf itself, being covered with pure white fur, was quite invisible. For over an hour the trail was followed, and when at last the dead body was found, it lay practically bloodless, having struggled on while there was a drop of blood in its veins.

In view of the difficulty of shooting them, the men resolved to poison them. But here, again, the wolves were not to be caught. The first time that poisoned meat was put out it was left untouched. Some good meat was added, and at once disappeared, though the pieces containing poison were still left alone. The poisoned baits were then taken up, and only good meat put down, the wolves always taking it until, their confidence being gained, a few poisoned baits were mixed with the others. The experiment succeeded so well that when the baits were next visited four wolves and one fox were found dead. The others, evidently alarmed, made off and did not again return.

Winter passed away in the drear and monotonous way that winter in the Arctic does and with the coming of spring the work of exploration began. The growing power of the sun as the months passed on is described in striking terms in the records of the expedition. An exploring party led by Greely himself found decidedly wintry conditions late in April. A large river was reached covered

with thick ice and leading to an enormous glacier five miles wide and 175 feet high, completely blocking up the valley. Everywhere the ground was covered with ice and snow, with no signs of life and no sound other than an occasional gurgle of running water under the river ice.

When, early in July, the valley was again visited an extraordinary difference in conditions was observed. They might have doubted the existence of what they had seen before but for the sparkling glacier. The river now flowed along, glittering in the bright sunlight, between banks covered with flowering plants. Bright yellow poppies gleamed all over the verdure-clad slopes, with sturdy heath blooms, daisies, and other blossoms mingling, and over them were flitting innumerable white and yellow butterflies. Bumble-bees droned, and flies, as well as the familiar daddy-long-legs, were everywhere present, and also their arch-enemies, the spiders. Ptarmigan, their white plumage somewhat speckled with dark feathers, plovers, and birds of smaller size, were seen on the wing; while over the verdant sides of the valley and along the banks of the river, large herds of musk oxen were browsing, with calves following the cows. The sky was brilliantly blue and almost free from clouds. In the face of so much that was beautiful and full of life, it was difficult to realize that a few months later the valley would again be desolate and deserted, owning once more the supremacy of the icy grip of the frost and snow.

Sledging parties were sent northward, one of them reaching the spot where the "Alert," of the Nares expedition, had passed the winter of 1875. It had been intended to go farther, but the ice proved impassable, and they were obliged to return after reaching a latitude of 82 degrees 56 minutes. Another party, under Lieutenant Lockwood, second in command of the expedition, had better fortune.

Setting out in the early spring, a course was laid across the frozen strait towards Greenland, the party consisting of thirteen

men and five sledges. Advantage was taken of the experience of the members of the Nares expedition, and in laying the plans for this trip provision was made for a series of food deposits and relief parties along the route. This is the method that has generally been since pursued and has proved of great advantage.

Some of these food caches had been made before the party set out, while the last was placed when in sight of Cape Britannia, the northwest extremity of Greenland. At this point the party divided, three continuing the journey while the others were sent back. The three consisted of Lieutenant Lockwood, Sergeant Brainard, and the Eskimo Frederick, one of the dog teams being taken with them. This team saved them an enormous amount of labor by dragging the sledge for them, but even then they found the traveling exceedingly difficult. Their sleeping-bags were damp, and consequently they were always compelled to rest in great discomfort. As they approached Cape Britannia the route became more difficult, and their best march was sixteen miles in ten hours. Beyond the cape an island was reached, to which the name of the leader, Lieutenant Lockwood, was given, and the extreme point of which furnished their "farthest north." They had succeeded in reaching the most northerly point that had yet been discovered, not only on the coast of Greenland, but also in the Arctic regions. The latitude recorded was 83 degrees 24 minutes north, being 4 minutes beyond that of the Nares expedition, and thus the honor which for three hundred years had been the boast of the British, that of having attained the nearest point to the North Pole reached by man, was wrested from the British Lion by its cousin, the American Eagle.

The coast line still showed beyond, and to the most distant point the name of Cape Washington was given. Then the small band turned back, having succeeded in reaching a few miles nearer the pole than Commander Markham, of the Nares party, whose journey, however, was over the frozen sea, whereas the other was along the Greenland and Peary Land coast.

The summer of 1882 came and passed without an appearance of the relief ship promised by the government. One had been sent out with a load of supplies, the "Neptune," under William Beebe, but ice and storms prevented its reaching the Fort Conger station and it returned, after leaving supplies of provisions at several points on the route. Its failure to appear caused no alarm, as food was still plentiful, but the coming on of another winter was, as usual, one of the unwelcome events of Arctic life. Comfort, however, was prepared for by carrying the snow, which in the preceding winter had been piled against the sides of the house, over the roof, a precaution which added considerably to the warmth of the interior.

When winter passed and spring came again—the spring of 1883—Lieutenant Lockwood and Sergeant Brainard made an exploration of the interior of Grinnell Land, covering 437 miles in one month's sledging, and adding much to the knowledge of that large island, hitherto unexplored in its interior. Summer at length arrived and anxiety about the promised relief ship arose. If it should again fail to come it would not be safe to remain another winter at Fort Conger, and preparations for a retreat in their boats was made. These consisted of a steam launch twenty-seven feet long, an ice-boat which had been abandoned by Lieutenant Beaumont, of the Nares party, in 1876, and two whale-boats. A depot of forty days' full rations was placed at Cape Baird and another of twenty days' rations at Cape Collinson, as soon as the ice was open enough to allow the launch to proceed. Then when it had returned and all the survey parties were in, a decision was come to that if no steamer arrived by July 31st the retreat would be commenced.

July passed and August arrived, but there were no signs of the approach of any relief steamer. They could not risk a longer wait, and on August 9th, with the boats loaded with the records of the work done and as much food as could be stored in them, the party bade farewell to Fort Conger and started on what was destined to be a tragic journey. The lateness of the season made navigation

extremely difficult for such small craft, and they were frequently impeded by ice which would have offered no obstacle to a big steamer. The adventurers had scarcely got out of sight of the house where they had passed the two long dark winters before they were so beset with loose ice that progress was almost impossible. Then new ice formed round them, and they were hard and fast. The fact that they only carried a limited supply of fuel made their position more serious, and when, on August 18th, a temporary breaking in the floes enabled them to move forward, there was a general rejoicing. But it was soon checked on discovering that they were forced inside of a huge mass of ice over fifty feet high and extending right up to the solid floe. It was impossible to turn back and fight through the drifting ice behind them, and the only hope of escape seemed to be to steam on in case there might be a channel through the floe ahead.

As they passed along the great wall of ice they were amazed at seeing a crevice run into it. Arriving opposite to it, they found that it was a cleavage which went right through the mass, and they turned into it. The enormous berg had grounded and had split asunder, leaving a passage a hundred yards long and barely twelve feet wide, the sides of which were sheer fifty feet high on either hand. Such a formation was unique, even in the Arctic regions, and the steaming through it was an adventure without a parallel.

The passage led into fairly open water, and they pushed on until Rawlings Bay was reached. Here the floes closed in on them so quickly that the boats were caught before anything could be done to save them. Hasty efforts were made to lift the lighter boats on the ice and to unload the food supplies from the others. The nip had not been severe enough to injure the boats seriously, but the ice held them captive, and the journey south was now restricted to the slow drift of the floe. By August 26th they had traveled 300 miles from Fort Conger and were within fifty miles of Cape Sabine, a headland where Sir George Nares had left a store of provisions in

1876. The present hope of the wanderers was to reach this point before the winter night set in.

Meanwhile, what had become of the government relief expedition? Two ships had been sent out, the "Proteus" and the "Yantic," well laden with supplies, but they had experienced much difficulty with the ice. The "Proteus" finally succeeded in reaching Cape Sabine, but for some reason unexplained it left there without depositing a supply of provisions, despite the fact that Greely would be almost certain to reach that point if forced to retreat from Lady Franklin Bay. Whatever the cause of this remissness, it proved fatal to most of the retreating party and nearly to all.

The "Proteus" left Cape Sabine after a short stay, but ice was soon again encountered, and on the 23d of July the vessel was surrounded by heavy floes. In the afternoon the ice closed in upon her in immense masses, crushing in the ship's sides. In the early evening a change in the tide opened the ice and set her free, but the "Proteus" was incurably injured and at once went down. Recognizing their peril, the crew had taken to the ship's boats, with what provisions they could save. A month was spent in reaching Upernavik, where the "Yantic" soon arrived and took them on board. This was a small and weak craft and at once sailed south with the rescued crew of the "Proteus," Greely and his party being abandoned to their fate.

When the "Yantic" reached St. John's it was the 13th of September, too late to make a further effort to reach the ice-bound explorers. The best that could be done was to prepare a relief expedition for the following summer, this consisting of the "Thetis" and the "Bear," two ships purchased for the purpose and put under the command of Commander W. S. Schley, of the American Navy. The British government also donated for the same purpose the "Alert," one of the two ships of the Nares expedition. These set out in April and May, 1884, reaching Littleton Island near the end of June.

Meanwhile Greely and his companions were passing through a terrible experience. We left them in the drift ice near the end of August. When the 1st of September came they were still beset, with barely fifty days' rations. They were in doubt what to do, whether to remain in the boats with the chance of drifting nearer to Cape Sabine, lying now about twenty miles away, or to push over the rough ice for the shore. Their commander was in favor of the former alternative, and they kept in the boats until September 10th, when it became evident that they would have to make a sledge journey to the shore.

Unfortunately, severe weather now came upon them and their journey became a struggle. They had tried to drag two of the boats with them, but one had to be abandoned, and on September 28th they were still struggling over the rough ice with the other. Only by the most persistent exertion were they able to reach the shore with their stores, this being at a point some distance from Cape Sabine.

They had now traveled 500 miles since they left Fort Conger, and not only were the men considerably exhausted by their recent struggle, but winter was setting in very rapidly with constant and heavy storms. It was therefore decided to form a camp where they were, while the snow had not frozen too hard for them to get some stones for a shelter. They had been compelled, on their journey over the ice, to abandon everything in the way of covering save their sleeping-bags, and unless they built a hut of some description the rigor of the winter would inevitably be fatal to all.

Such stones as could be found were collected and built into a low wall forming a square of about sixteen feet. The stones were difficult to obtain, and the wall could only be made three feet high. An opening was left in one of the sides of the square and a passageway constructed, so that the entrance to the interior did not open directly on to the frozen exterior. Across the top of the walls the boat they had dragged with them over the ice was laid keel upper-

most, the oars being laid under it so as to maintain it in position, the open spaces between the sides of the boat and the walls being covered with such canvas as they had. Around the stone walls and over the top, snow was piled, and their living house was complete. It sheltered them from the wind and from the extreme bitterness of the cold, but beyond that nothing could be claimed for it. Every one had to enter it on hands and knees, and, once inside, no one could stand up, while the taller men of the party were only able to sit up in the middle of the hut where the boat made the roof slightly higher.

The men arranged their sleeping-bags against the walls with the feet towards the middle of the floor, and when they had crept in through the narrow entrance, they groped their way into the bags. Then, half lying and half sitting, with their shoulders against the stones behind them, they made themselves as comfortable as they could during the long period of darkness. They divided themselves into messes for the purpose of feeding, and two cooks prepared the food, an operation that was always difficult and unpleasant. It had, of necessity, to be carried on inside the hut, and when the two men were kneeling in a cramped-up position over the make-shift for a stove in the middle of the floor, there was no room for any one else to stretch his legs. Every one had to huddle up as closely as possible, and as all the smoke from the stove had to find its way out of the hut the best way it could, the atmosphere during cooking time was far from refreshing. The heat from the stove also thawed the ground immediately under it and the snow on the canvas over it, so that the cooking of every meal meant a wetting and a choking for the cooks.

The hut finished, a party set out for Cape Sabine in search of the provisions supposed to be stored there. They returned on October 9th, having found a record of the sinking of the "Proteus" just off the cape and the starting of its crew in boats to the south in search of the "Yantic." Some provisions were found and their

whale-boat, which had drifted ashore near the cape, was recovered. At a later date it served them for firewood when their other fuel was exhausted.

The news brought was a serious blow to the wanderers. They knew now that no help could reach them till the following spring or summer. And it was found that the party from the "Proteus" had used much of the stores upon which the Greely party had depended. When they obtained what was left, part of the bread was found to be a mass of green slimy mildew. Yet so hungry were the members of the band sent to convey the stores from Cape Sabine to the hut that when the green moldy stuff was thrown out by the officer in charge, the men seized and devoured it despite all he could do to persuade them from such a course.

The question of the strictest economy in the management of the food supplies was now a matter of life or death, and very seriously the leaders debated it. On October 26th the sun sank beneath the horizon, and in the ensuing darkness, which lasted for 110 days, there would be no chance of obtaining any game. A few blue foxes had been killed since the camp was formed, and half the number were set aside for subsequent consumption, those consumed at once being devoured to the bones, every part being put into the stew.

Meagre as the rations were, it was necessary to reduce them still further if the food was to last until the spring. By a further reduction it was calculated that the party could exist until March 1st, when the available supplies would amount to ten days' rations. But no relief could possibly reach them until a couple of months later than that, and how were they to live after March 10th, when the last crumb of their supplies had been consumed.

There was only one course open for them, and that was explained by the leader. On November 1st the allowance for each man would be fourteen ounces, given out every twenty-four hours, and on March 1st, as soon as there was light, they would take their remaining ten days' supply and set out across the frozen straits in

the forlorn hope of reaching an outlying camp of Etah Eskimo on the Greenland coast.

The terrible prospect of such a scheme to men situated as they were can scarcely be imagined. For four months they would have to face that rigid diet, suffering the pangs of starvation constantly, almost entirely in the dark, and always huddled up in the sleeping-bags against the walls of their low-roofed hut. Yet they accepted the scheme without a murmur.

Seldom have men shown themselves so absolutely courageous, for at the best it was merely slow starvation so as to be able to make an almost hopeless dash for freedom and food in four months' time. The suffering during those four months was terrible. Men, as soon as they got hold of their day's rations, were tempted to devour them at once, and so still for a time the ceaseless gnawing of hunger; but to do so meant that in an hour's time the pain would be back again with no means of staying it until twenty-three hours had passed. Calmly and bravely they faced the ordeal, dividing their scanty store into regular meals, and when, by an accident one of them upset his can, spilling his few mouthfuls of tea on the ground, the others contributed from their share so that he should not go entirely without. Nothing could exceed the touching fidelity which characterized their bearing, one to the other, during this period of unexampled suffering.

At Cape Isabella, a stock of 140 pounds of meat was known to have been left by Sir George Nares, and a party of four set out in the hopes of securing it. For a week before they started they were allowed an extra ration in order to strengthen them for the trial of a journey in the dark over rough ice and with the temperature at 34 degrees below zero. The extra ration consisted of two ounces a day.

For five days they battled their way through the darkness against a heavy wind laden with snow, and at last found the food. Piling it on their sledge, they turned back home, and for fourteen

hours labored with it, consuming only a little warm tea during that time, for they had no means of heating more. One of the four was badly bitten by the frost, and was soon so stricken that he could not even stagger along. A piercing wind was blowing, and to save their comrade's life, the others abandoned the sledge and tried to support him. Soon two of them became exhausted, and the remaining one, Sergeant Rice, pushed on alone to the camp in order to bring help. For sixteen hours he fought his way over the twenty-five miles that lay between him and the hut. When he arrived there his lips were too frozen for him to be able to speak at once.

Wearied and weak as the whole party was, eight of the strongest at once started out to the rescue. When they reached the spot, they found the men lying under the sleeping-bag, which was frozen so hard over them that it had to be cut open before they could be got out. Then they resumed their way to the camp, which they reached after forty-four hours' absence, in which time they had covered forty miles.

The frost-bitten man, Elison, was almost dead, his face, feet, and hands being absolutely frozen, but so determined were they all to survive as long as possible that he was tended with all the care they could command. He was kept alive in spite of his sufferings, which, during the first week after his rescue, were so severe that he daily called on his comrades to end his misery.

Meanwhile the memory of the abandoned sledge laden with meat was constantly in the minds of the starving men, whose hunger was now so great that in the darkness after the lamp was put out—economy compelled them to use it only for cooking—men crept to the stove and devoured any rancid fat left in the lamp. The success of the journey across the ice on March 1st was what they looked forward to, and with the arrival of that date they believed their sufferings would be over.

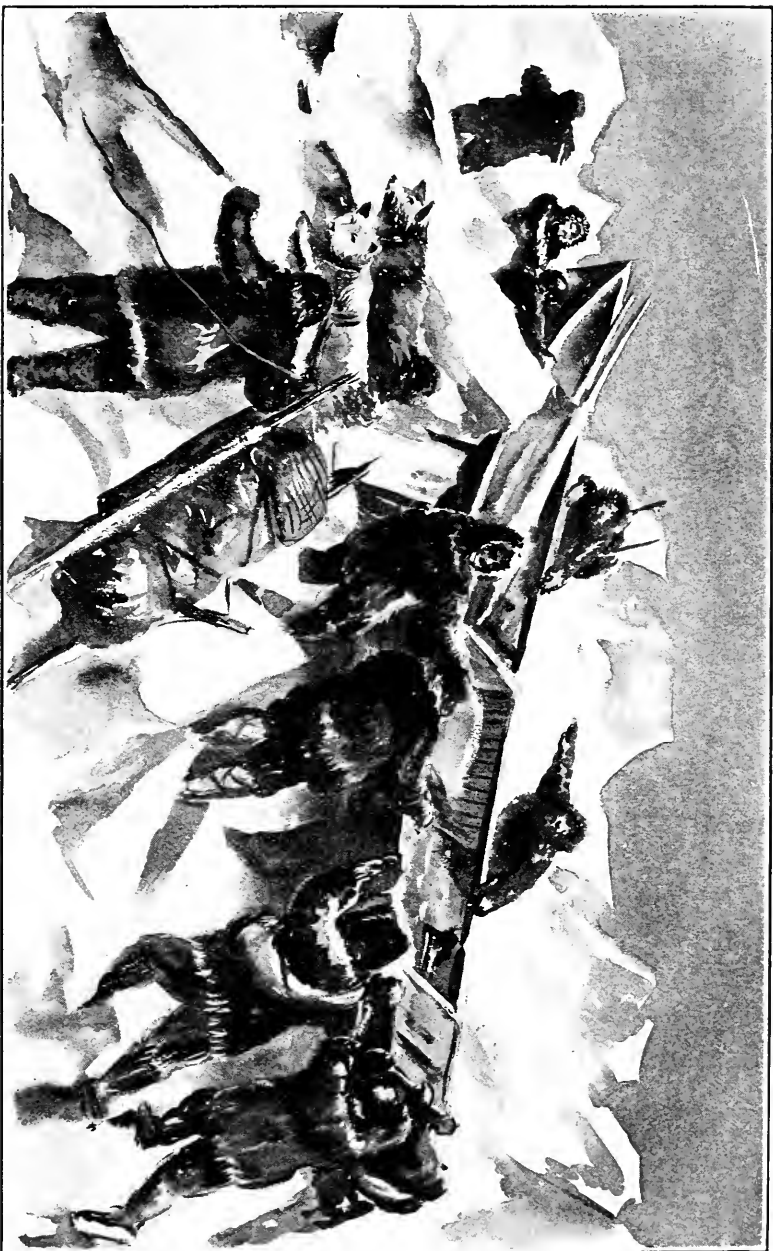
On January 18th the first one of the party to die passed away, really of starvation, although the men, to keep the ugly word away

from their minds, accepted the doctor's statement that it was of an effusion of water at the heart that the man had died.

Sergeant Rice, accompanied by the Eskimo Jens, now made a plucky effort to reach Littleton Island, where an outlying camp of Eskimo might be found; but Jens could not stand the journey, and, five days after starting, they returned. Every one was now impressed with the necessity of husbanding their energies for the great effort to be made on the first day of March, and as February slowly passed away, the emaciated creatures grew enthusiastic as they sought to cheer one another up by detailing the tremendous feasts they would have when they returned to civilization. At length the 1st of March dawned, and the brave hearts, which had kept up so long against starvation and despair, shrank before the terrible blow they received. The ice had broken, and open water rolled where they had planned to cross on the ice. Nothing was said, for the courage of the men was only equaled by their consideration for one another, but the effect of the great disappointment sank deep into the minds of many.

The food remaining was eked out through the month with the aid of some blue foxes and a ptarmigan, which were eaten to the bones, and April found them with only a few days even of the starvation rations remaining. Several of the men were so weak that they could barely turn over in their sleeping-bags. The Eskimo Frederick was found dead in his bag, and another of the little party followed the next day. Then Sergeants Rice and Fredericks insisted on making an effort to reach the meat abandoned when Elison was frost-bitten. It is difficult to understand why the effort had not been made before; but many errors of judgment are conspicuous after a campaign which are not so apparent in the moment of struggle.

Now that it was made it failed, through the freezing wind penetrating the starved bodies of the two men. Rice, who throughout the terrible ordeal of their captivity had never spared himself, was the first to feel it. A strong wind was blowing, bringing down



CROSSING A BROKEN ICE FIELD

This illustration gives some idea of the difficulties which Arctic explorers must endure in making progress over the ever-moving floes. Crushed and jagged from the enormous pressure of the vast ice pack, the surface rises into hills and valleys over which the men must haul their entire outfit, often when reduced by cold and lack of food to weak shadows of themselves.



DeLong

[From DeLong's "Voyage of the Jeannette," Houghton-Mifflin Co.]

THE "JEANNETTE'S" BOATS SEPARATED BY THE STORM

DeLong and twelve men in the first cutter, Chipp and nine men in the second cutter, and Melville with nine men in the whale boat, started to sail from the edge of the Polar ice floe to the coast of Siberia. They had traversed successfully about four-fifths of the voyage when the boats were separated by a heavy gale on September 12, 1881, and September 17th DeLong's boat reached land, which they supposed to be the "Lena Delta." During the month of October every man who had started in DeLong's boat, except two, had perished. Melville was fortunate enough to reach native settlements and brought his party through. Chipp and his men were never heard of again.

heavy snow squalls. Suddenly Rice began to talk wildly and then staggered. Fredericks grasped him by the arm and tried to keep him up, but the cold and starvation had too tight a hold upon their victim. He vainly endeavored to pull himself together, but only for a moment; then he sank down on the snow, babbling about the feast he was going to enjoy.

His comrade tried to restore him by giving him some of the stimulants they had with them, and did not hesitate to strip off his own fur coat to lay upon him, sitting the while, holding his hands, and exposed to all the biting fury of the Arctic wind, in his shirt sleeves. But everything was useless; Rice was too worn out and too weak to fight further, and died as he faintly talked of the food he fancied he was eating.

The shock to Fredericks was almost overwhelming, for he was miles away from the camp, chilled to the bone, and with only a little coffee and spirits of ammonia to revive his own drooping vitality. Yet he would not leave his dead comrade until he had reverently laid him in a shallow resting-place in the snow, though it almost cost him his life to pay this last tribute.

When he at last managed to reach the camp with his sad tidings he was almost gone, and the news he brought plunged every one into the lowest depths of sorrow, for Rice had always been one of the bravest and best of the party. Those who were able to do so, attended Fredericks and revived him.

To those who were weakest the end of Rice was a fatal blow, and the next day or so saw three or four pass away, one of whom was the intrepid Lockwood. A very few more days and all would have gone but for a gleam of good fortune. A young bear was killed, and the 400 pounds of meat obtained from it was the salvation of the survivors.

Several seals were seen in the straits and a few walrus, and all who could still handle a gun were daily striving to obtain fresh supplies for the larder. Eskimo Jens, who hunted assiduously, suc-

ceeded in killing a small seal; but in a chase after another his kayak was injured in the ice and he was drowned.

After his death only misfortune attended the hunting, and, failing to replenish their stock of game, they were reduced to such a terrible plight that they had only the thick skin of the seal on which to subsist. Even this fare was carefully divided and measured, so that life might be maintained as long as possible in case a relief vessel came. One day it was found that somebody was stealing. All the party was assembled, but no one would admit the theft. It was decided that the thief should be shot, if discovered. One man, being suspected, was watched. He was caught and executed.

A fortnight later, the last few square inches of the seal's skin was gone, and the men, now little more than living skeletons, lay in their sleeping-bags looking at one another with hollow eyes, wondering, perhaps, who would be the last to go, when a steamer's whistle sounded over the straits.

It was the "Bear," of the expedition commanded by Winfield S. Schley, with whom came George W. Melville, late of the "Jeanette," for engineer. They had left St. John's on May 12th, and pushed north through the ice of Baffin's Bay and Smith Sound, sending a party ashore on June 22d to search for signs of the missing explorers. On Brevoort Island a letter written by Lieutenant Lockwood was found, giving their location and stating that their food supply was nearly gone. As this was dated eight months before, the dismayed officers lost hope of finding any of them alive. Before sunset of the next day Greely's camp was discovered. Greely was seen on his knees, muttering the prayer for the dying over one of his comrades. He looked up, dazed, bewildered, unable to read the meaning of what met his eyes.

"Greely, is this you?" asked Colwell, one of the party of rescue, as he took the emaciated hand.

"Yes," answered Greely, in a scarcely audible voice. "Yes—

seven of us left—here we are—dying—like men. Did what I came to do—beat the record.”

Seven there were. Death had taken its toll of all the rest. A day or two more and not a man would have been alive. The careful use of restoratives saved the survivors from death, and Adolphus Greely still dwells among us, a man of high honor among his countrymen.

CHAPTER XX

Nansen's Memorable Voyage in the "Fram"

THE cruise of the "Jeannette," of which we have elsewhere spoken, had one unexpected result. It was the inspiring cause of one of the most memorable of polar voyages. This arose from the fact that relics from the lost ship were found in 1884 frozen in floating ice off the coast of Greenland. This fact led to much discussion among geographers and the belief arose that a strong and steady current flowed along the course over which the "Jeannette" had drifted and along that afterwards taken by the floating relics. This belief was not sustained by the experience of DeLong and Melville, of the "Jeannette," but it was held by many others.

Here was something worth proving. A theory is of no value until it is demonstrated. As the belief that the world is round was not proved until the adventurer Columbus undertook to demonstrate it, so the theory in question remained an academic opinion until a man was found willing to test its accuracy. The man appeared in the hardy Norwegian, Fridtjof Nansen.

Nansen was by no means a beginner in Arctic work. He had already made a daring journey across Greenland, he being the first man to cross its frozen interior. This was done in 1888, when he started in at a point on the east coast of Southern Greenland and emerged at a point on the west coast, having traversed the great central ice-field of the island.

As a student of Arctic phenomena, he became firmly convinced of the existence of a drift current across the polar region and grew eager to demonstrate it. It seemed to him that if a vessel were built

of sufficient strength to withstand the pressure of the winter ice, and provisioned for a sufficiently long period, there was every chance of its drifting along the entire course of the current, perhaps to within a measurable distance of the pole, and certainly well within that region which had hitherto been unexplored. The area affected by the current would have to be entered as near the outside edge as possible, so as to participate in the full sweep of its curve, and, in order to avoid the terrible crushing pressure of the winter ice, the vessel would have to be so built as to cause it to be lifted by the ice, when the pressure became too severe, and thus rest on the top.

His views, when published, did not meet the support he hoped for. Some of the veterans in polar research argued that it was impossible to build a ship that could withstand the terrible pressure of the northern ice-fields. But Nansen was not discouraged and he found a shipbuilder willing to build such a vessel as he desired, while the Norwegian government voted a sum of over \$55,000 towards the expense. Other support was obtained, and the building of the "Fram" ("Forward"), as the proposed vessel was called, was at once begun.

She was built of wood and of tremendous strength, her beams and sides being of great thickness, while on the outside of the hull not a single angle was allowed to remain. Every projection was carefully rounded off and smoothed, so that there should not be as much as half an inch protruding and capable of affording the ice a holding place. Even the keel was sacrificed to the general idea of avoiding possible holding places for the ice. The lines of the ship were necessarily different from those of the ordinary vessel. Her sides bulged outwards and the stern and stem sloped away, so that whichever way the ice exerted the pressure, the "Fram" would present a smooth surface to it, inclined in such a way that the tendency of the ice would be to get under it and lift the vessel up. This did not improve her qualities as a sea boat, and the way in which she afterwards pitched, plunged, and rolled, whenever she

came into a moving sea, tried the sea-faring capacities of every one on board.

She was fitted with engines and a screw, and was rigged as a three-masted fore-and-aft schooner. Electric light was laid on all over her, the power being generated by a windmill when the engine was not working. Every available crevice was utilized for the storing of coals and provisions.

By the middle of June, 1893, the thirteen men who formed the expedition had succeeded in finding a place for everything, though not without some difficulty, for the quantity of the stores which had to be packed was enormous. By a delay in delivery, just as they were congratulating themselves that everything was stowed away, a shipment of dog biscuits arrived. The ship was full already, but the biscuits had to be stored somewhere, so one of the men wriggled right up into the bows, and between the beams and the ribs he packed away the troublesome late arrivals. Everything was at last on board and stored, and on June 24, 1893, the "Fram" started on her memorable journey.

It is not here proposed to give in full detail the story of this memorable voyage, but to confine ourselves to its more salient points, avoiding the repetition of many features of Arctic life given in former chapters. It must suffice then to say that the route lay up the coast of Norway and from North Cape through the Arctic Ocean until Chabarowa, in the Yugor Straits, was reached on July 29th. Here thirty-four Siberian sledge dogs were obtained, the boilers cleaned and other preparations made, and the "Fram" put to sea again, reaching the Kara Sea on August 4th.

Here ice and adverse winds caused delay, and the men occupied themselves in hunting, game being plentiful. The result was the gathering of an abundant supply of fresh meat, consisting of reindeer, seal and duck. A bear was also shot and a large quantity of walrus meat obtained, though in shooting the latter Nansen lost his favorite rifle, which dropped overboard and could not be recovered.

Cape Chelyuskin, the most northerly point of Asia, was reached on September 10th. They were now nearing the region in which it was thought the current turned northward, and after steaming a week further east the course was changed and the "Fram" headed northward. As long as there was open water ahead the energetic crew kept working their vessel so as to get her as high up as possible into the area affected by the current; but when they had passed the line which marks the limit of the floes, they soon found that further navigation was impossible. The "Fram" was soon fast in the ice and, with winter upon them, the crew made themselves and the ship as comfortable as they could.

The builder of the "Fram" had given attention not alone to the exterior of the vessel; he had also made the internal arrangements as complete as possible for the comfort of the explorers during the prolonged period they were to remain in the ice. Now that they were in the pack, they realized how well their comfort had been considered. For the matter of that, they had always found their quarters cosy, even when the "Fram" displayed her capabilities of rolling and tossing. The main cabin, in which they lived, was always warm, and the passage-ways leading from it to the outside were so skilfully arranged that those on board did not experience the distressing moisture which was so troublesome on the "Alert" and "Discovery." The electric light as a substitute for lamps was also an admirable innovation, for the interior of the cabin was always brightly lit without the air becoming heavy, as would have been the case with exposed lamps. A great deal of thought had also been given to ventilation, with the result that the cabins were never close.

Over the deck a large screen was erected, tent shape, and above it there was reared the windmill which drove the electric motor and generated the electricity for the lights. As the ship was to remain in the ice until it drifted out again, everything was made snug for a long stay. On the ice alongside various observatories were erected

and scientific instruments placed to make complete records, and later, a row of comfortable kennels was made for the accommodation of the dogs.

These animals at first had been somewhat troublesome. They were so savage that it was necessary to keep them all tied up on deck, and during the voyage along the coast they were frequently wet and miserable, and incessantly howling. Once, rope muzzles were made, and when each dog was fitted they were allowed loose; but an Arctic dog requires something stronger than a rope to keep its jaws closed when let loose among a lot of other Arctic dogs. The result of the experiment was not a success, except from a dog-fight point of view; when at length the struggling, snarling, snapping pack were separated, they were tied up again to the deck until the ship was fast in the ice. By that time they were somewhat reconciled to one another; when they had been allowed to have a scamper or two, with plenty of opportunity to find out who were the kings and who were not, they settled down into a big happy family.

It was in latitude 78 degrees 50 minutes north that the "Fram" was first frozen in, and her course was watched with much anxiety to see in what direction she would drift. To their dismay the course was toward the southeast, and they feared that they had missed the northward drift looked for. A few days later, however, the course turned north and all were happy again.

As for the ice, it steadily increased in thickness and there was constant movement in the mass, the pressure causing it to heave upward and pile into great rugged hummocks. The "Fram" had vastly more resisting power than the "Jeannette;" but could any work of man's hands withstand those jagged masses, which lifted before the pressure behind them until they stood forty and fifty feet high? Sometimes they were forced up so high that they overbalanced and crashed down upon the lower masses with the roar and rattle of thunder.

It was during their second winter in the ice, on January 4 and

5, 1895, that the "Fram" was subjected to the greatest pressure experienced. The ice was now thirty feet in thickness, a fact which was ascertained by boring, and immense masses of it came gliding and pressing with tremendous force against the port side of the ship. It piled itself up above the gunwales and high up the rigging, threatening, if not to crush the imprisoned ship, at least to bury her beneath its mass. Scarcely a man aboard believed she could live through this terrific assault.

All the boats were taken out on to the ice and filled with provisions; the dogs were put in kennels also on the ice where they would be free to escape if necessary, and every one was constantly on the alert for the first sign of the "nip." All hands were ready to leave ship and no one was allowed to sleep unless fully clothed.

At last it came. They were all at meals when the increased uproar of the moving ice told them that the movement was nearing the vessel. Then, for the first time, they heard the ominous sounds of creaking timber. The "Fram" was being "nipped."

Every one hurried out of the cabin to see to the boats and the dogs and the stores. For the moment it seemed that nothing could save her, and that the stupendous weight of the gliding wall would soon grind her solid timbers into splinters. There was a sound of rending; a groaning crash; the "Fram" shivered till the breathless watchers thought they saw her spars tremble. Then, with a mighty wrench, she broke from the bonds that held her, and slowly rose from her nest in the ice, slipping upwards and away from the crushing force. A cheer burst from the lips of every one as she moved, for it meant not only the realization of the hopes and ideals of those concerned in her construction and the complete vindication of their faith in her, but also the guarantee that the explorers were safely and securely housed, whatever might transpire.

When the movement in the ice had subsided, it was found that the "Fram" had slipped out of harm's way in a marvelous manner. So firmly had she been frozen in that the spot from whence she had

been driven contained a complete mold of her shape, every seam and mark being reproduced in the ice. This proved that the test had not only been a severe one, but conclusive as well, since the vessel had really been frozen so solid into a mass of ice as to be a part of the mass. Her escape was an overwhelming disproof of the adverse theories expressed against her, and an entire victory for Nansen.

The existence of this constant movement of the Arctic ice, which is everywhere found, calls for some explanation. It might be imagined that the vast field of thick ice in the polar seas, extending for some two thousand miles between the northern shores of America, Asia and Europe, would rest in one vast, moveless plain, resisting storms and all other disrupting forces. And so it might but for a constant movement in the water itself, that of the tides, with their daily rise and fall.

The ebb tide, in the shallower waters, leaves wide tracts of ice, previously afloat, straining on the ground, cracking so as to form enormous fissures and weakening the surface resistance. On the other hand, the flood tide wells and presses against the overlying barrier of ice, lifting it up until it cracks and opens, the pressure underneath raising the separated masses upon their neighbors, which in turn resist with all their weight and grind back upon the masses beyond. With the turn of the tide the forced-up masses gravitate down again, tumbling, crashing, bounding and rebounding one upon the other.

It is a battle between the energy and the resistance of nature, and usually energy wins along the line of least resistance. Here, when once a point gives way, the accumulated force concentrates. The "point" may be an area of ice a hundred miles square and fifty feet thick, and this tremendous mass, moved by the immeasurable force of the water pressure beneath it, grinds upon its surroundings and upon itself. Huge masses are pushed upon the surface of the pack, crushing, grinding, and splintering as they go, their weight causing the under ice to bend and crack, and so add to the confusion

of the struggle. Mass meets mass in a test of strength, and, failing to climb over one another, crush together, closer and higher, until there is a diminution of the pressure from below and they surge back, shattering themselves in the commotion and yet binding themselves into a single unit strong enough to resist the next onslaught of the tidal energy.

This is the kind of conflict that was going on around and beneath the "Fram," the sturdy vessel braving every nip by slipping upwards from the pressure; the crew, confident in her capabilities, living in merry good-humor in her cabin. What the confusion of the ice was like may be gathered from the opinion of those who saw it when the return of the sun enabled them to do so, and also relieved the pressure. "Imagine a stormy sea, all broken waves and flying billows, suddenly frozen solid into ice, and you have some idea, on a small scale, of the piled-up hummocks on the pack."

During their second winter in the ice Nansen determined on a bold experiment. Believing that the "Fram" would soon reach the highest latitude to which the current was likely to carry her, the drift then tending westward through the sea north of Franz Josef Land and towards Spitzbergen, he conceived the plan of leaving the ship under the efficient care of Captain Sverdrup and taking to the ice himself in a sledge journey farther north. He proposed to take but one companion, with provisions sufficient for a dash northward and a return to land at the Franz Josef islands, as it was hopeless to expect to reach the "Fram" again. For companion he selected Lieutenant Hjalmar Johansen, of the Norwegian navy, who had joined the expedition as stoker and had subsequently become Nansen's meteorological assistant.

A start was made on February 26, 1895, with six sledges and provisions for men and dogs for several months. But they found themselves too heavily equipped and were obliged to return to the "Fram" again, to reduce the weight of their convoy. The next start was made on March 14th, this time with three sledges, two

kayaks and twenty-eight dogs, the quantity of provisions being considerably reduced. The "Fram" had now reached the eighty-fourth parallel of latitude, the highest northing so far made, and the route of the adventurers lay along the one hundredth parallel of east longitude.

For the first few days traveling was slow, heavy, and laborious, the ice being rough and rugged. But it grew smoother as they advanced, and always, at the end of each period of travel when they formed their camp, the Pole was nearer. On March 22d they reached 85 degrees 10 minutes north latitude. The ice they were journeying over now was not only rough but was constantly moving, the drift being against them. But still they pushed northward and on the 29th reached the latitude of 85 degrees 30 minutes.

Progress now became slow, the southward drift growing stronger while the ice grew very rough. The labor was severe, the ice being piled up in ridges and hummocks, over which the heavy sledges had to be drawn. In these cases the dogs were of no assistance, they patiently resting until the obstacle was passed, and then drawing the sledges over a short stretch of level ice until a new ridge was reached. On April 7th they were at 86 degrees 14 minutes north latitude, the highest northern point attained by man up to that time, and only about two hundred miles from the Pole.

It was unsafe to venture farther. If they should meet equal obstacles on their return they would have great difficulty in reaching the nearest land. This was Franz Josef Land, lying to the southwest of where they were. They had unluckily left their mid-winter clothing on the ship, thinking that it would not be needed in the spring weather, but in a temperature ranging from 49 to 4 degrees below zero they felt the want of it severely, the perspiration of the body converting their woolen clothing every day into an icy coat of mail, which had to be thawed out by the bodily heat at night when they crept into their sleeping-bags. As a result they would shiver for an hour and a half before they felt at all comfortable.

The food for the dogs daily grew scarcer, and they were anxious to get on as far as possible before it was finished. When, therefore, they came upon a stretch of fairly smooth ice, they made the most of it, and only when they and their dogs were dead tired did they stop. It was their custom to always wind up their watches when they crept into their sleeping-bags, but on one occasion, after they had kept afoot for thirty-six hours at a stretch, when they took them from under their heavy clothing they discovered that both had stopped. In their anxiety to push forward they had forgotten to wind them up and the springs had run down. There was nothing to do but guess at what the time ought to be, and it became difficult to estimate their position.

Their next trouble was the failure of the dog food. When the first dog died they kept him, for unless they fell in with a bear and killed it, the bodies of the weaker dogs was all that they could give the stronger ones to keep them alive.

They expected to reach land by the end of April, but April and May passed, and still only the rugged ice was in view. One by one the dogs had to be sacrificed until only two remained. The weight of the sledges was also very considerably reduced by this time. The third sledge had been abandoned, and now each man, assisted by one dog, dragged a sledge on which rested his kayak, his *ski*, fire-arms, and other necessities, as well as a moiety of the remaining stores.

June came in and still no land was in sight, but the character of the ice was changing, though not very much for the better. It was not so rugged and hummocky, but it was frequently intersected by channels mostly full of floating pieces. It was useless taking to the kayaks to cross them, and often impossible to go round, so they adopted the method of jumping from piece to piece, and drawing their sledges after them. On June 22d they came upon a seal, which they succeeded in shooting and securing, a fact which was so memorable that they rested for a day, giving the dogs an ample supply of

the meat. But the rest was scarcely idleness, for they were visited by three bears, all of which also fell under bullets. They now had abundance of food, both for themselves and the dogs, to last a few weeks if they did not come in sight of land. Two days later, however, they saw it, lying ahead of them, and they pushed on till a wide, open channel stopped them.

It was evident that the kayaks would have to be used in getting across, and they were taken from the sledges and examined. The result of the rough handling they had undergone in the journey over the ice was manifest in many a crack and hole in the skin-covering, but how to repair them was a question which taxed even the ingenuity and enterprise of the two intrepid Norsemen. They had enough skins to make patches, and twine with which to stitch them on. It was the making of some waterproof coating for the stitch-holes that puzzled them. They possessed a little train-oil, and by fixing up an arrangement over their spirit cooking stove, they obtained a little soot, which was mixed with the oil and used as paint. It was not a very artistic compound, but it was the best they could make, and it kept the water out. Then the kayaks were carefully fastened together by the *ski*, and upon them was laid the sledges and the stores.

When everything had been made fast, the explorers prepared to launch them. Johansen was behind Nansen, and stooping down, when he heard something moving at his back. Thinking it was one of the dogs, he did not look round, and the next thing he knew was that something hit him beside the head, so that, in his own words, "he saw fireworks." He fell forward, and immediately felt a heavy body upon him. He managed to turn partly round, and saw just above his face the head of a huge bear.

Nansen, ignorant of what had occurred, was bending over his end of the kayak, when he heard Johansen exclaim, "Get a gun." Glancing round, he saw his comrade lying under the bear, gripping its throat with both hands. With everything securely tied to the

kayaks, it was no easy matter to extricate the weapon, and while he was seeking to get it he heard Johansen quietly say, "You will have to hurry if you don't want to be too late."

The two dogs, all that were left of the twenty-eight, were standing snarling at the bear, and as Johansen spoke the one which always traveled with him approached nearer. The bear, having his attention for the moment distracted, stepped off Johansen, who immediately wriggled away and scrambled to his feet. Just as the bear turned on to the dog, Nansen got the gun out of its case. Swinging round, he found the bear close beside him, and he pulled the first trigger he touched. It fired the barrel loaded with shot, but so near was the bear that the charge entered behind the ear without having time to scatter, and brought him down dead between Nansen and Johansen.

The former was terribly afraid that his companion had been seriously injured, but the only mark the bear had left was a streak across the face where the dirt had been scraped away. As they had not washed their faces since they left the "Fram," there was a thick covering of dirt on them, and the bear's claw, as it passed over Johansen's face, had scraped this away, leaving the white skin to show through.

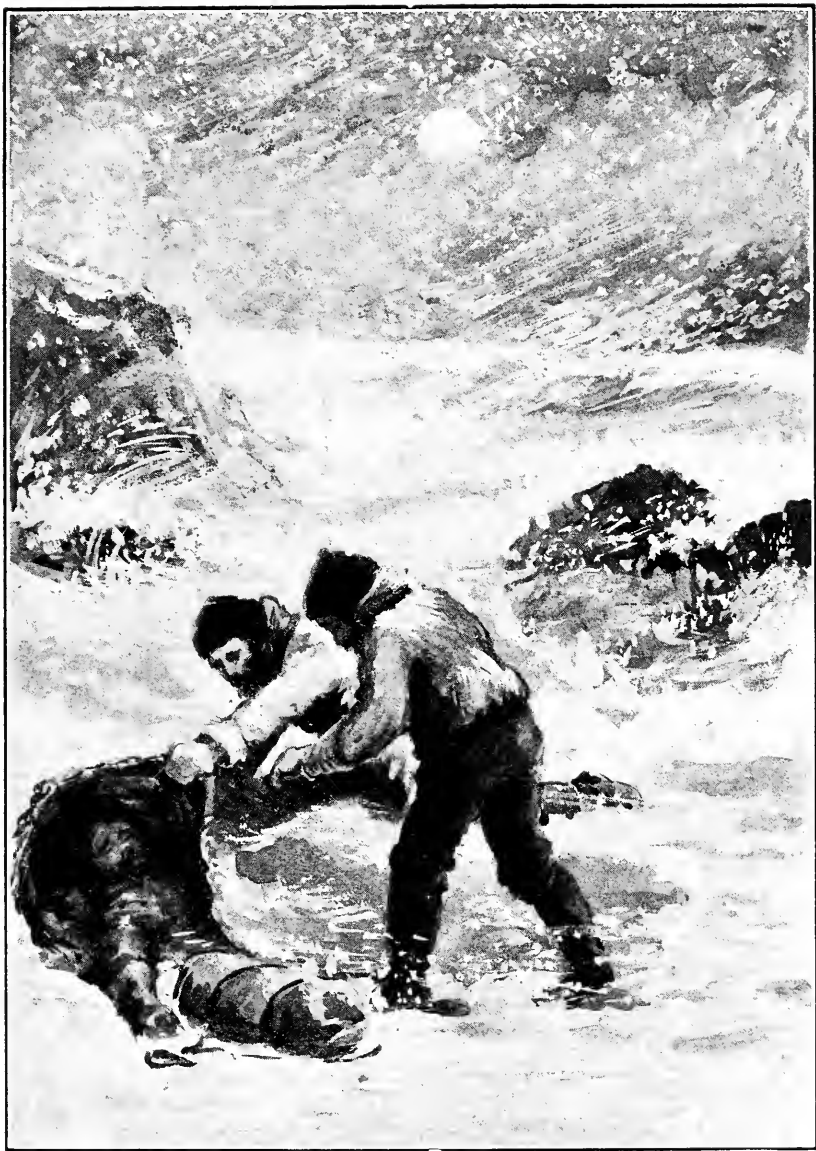
Though land had been seen in June, they had a long struggle over the ice and water before it came in sight again. Through the remainder of the month and the whole of July they battled with the broken ice and difficult channels, making little progress with great toil, and it was August 6th before land was once more seen, what they saw being one of a group of four islands. They continued, however, upon the ice, following it downward until August 26th, when they were in about latitude 81 degrees 13 minutes north and longitude 55½ degrees east. They had been hoping to reach Spitzbergen, where a ship might have been found, but the season was now so far advanced that they felt it necessary to winter where they were. In crossing the open water to the shore they found it impos-

sible to bring their two dogs across in the kayaks and could not abandon the poor brutes on the ice. They therefore mercifully shot them to save them from the painful death of starvation.

As soon as they came to a place which recommended itself to them, they ran ashore and landed the kayaks and stores. The place was merely a barren, rocky coast, sheltered somewhat by the high ground behind, but without a trace of vegetation. On the beach one piece of drift-wood was found. In addition, there were plenty of small boulders, but such material was scarcely sufficient for the building of a hut in which to pass the dreary, cold, dark winter.

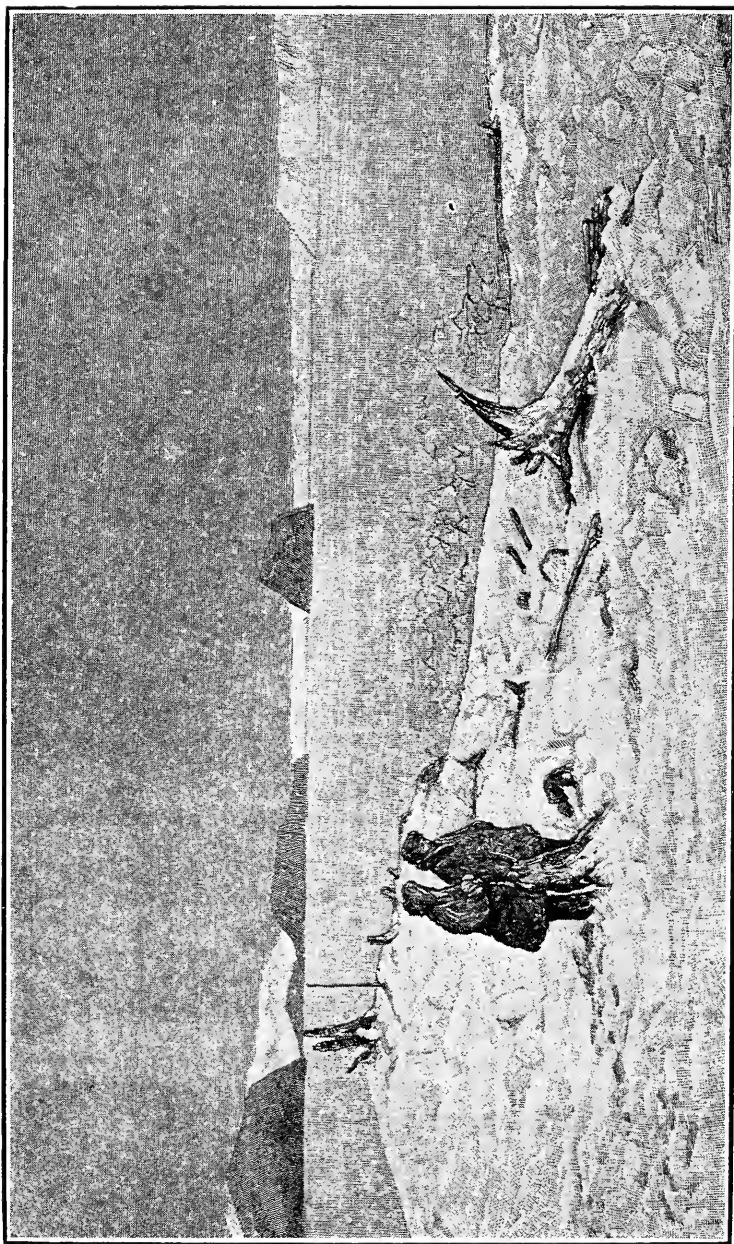
They overhauled their stores, and found they possessed two guns, some cartridges, a small hatchet, and two knives. With the hatchet, after considerable labor, they cut through the piece of drift-wood, and rejoiced in the possession of a suitable ridge-pole for the center of the roof. Stones were collected and built into a low wall, within which all their property, except the guns, kayaks, and knives, was placed. Then, with the unstored articles, they set out along the coast and the floating ice to seek the wherewithal to complete the house.

Walrus was what they especially needed, for the hide would afford a covering for the roof, the blubber would furnish fuel for the stove, and the meat would be useful as food. They spied two lying at the edge of a piece of ice and, approaching with the utmost caution, succeeded in shooting both. Their weight, however, as they fell over, caused them to slide from the ice, and they were in the water before the men could reach them. They secured the carcasses, so as to prevent them from either sinking or drifting away, and essayed to haul them up on the ice again so as to remove the hides and blubber. But the combined strength of the two men was insufficient to pull one of the huge carcasses up on to the ice again, and they were compelled to strip the skin and blubber off as the walrus lay in the water. This necessitated lying upon the floating carcasses, and by the time the operation was completed, their



THREE MEN SAVED FROM DEATH

The commander had sent Rice, Frederick, Elison and Lynn to Cape Sabine to obtain meat. The Arctic night enveloped them. Getting the meat they started on their return, and on reaching one of the camps Elison's hands and feet were frozen. The men threw away the meat in order to drag and carry their comrade. Finally they broke up their boat to build a fire to save him. Rice staggered twenty-five miles to bring Brainard and Christiansen to their succor. Two of the men were frozen in their sleeping bags by the time the relief party reached them. None of these men except Brainard and Frederick lived through the ensuing privations.



From DeLong's "Voyage of the Jeannette," Houghton-Mifflin Co.

MELVILLE FINDS THE BODIES OF DELONG AND HIS MEN

Mr. Melville, later retired Rear-Admiral, who was in command of DeLong's whale boat after the "Jeannette" broke up, made his way to villages in Siberia and organized a party to search for Captain DeLong and his men. Retracing the route of the two men who had saved themselves out of DeLong's boat, he came upon records and traces of the party at various stages of their progress, and, though obliged to return to his starting point, discovered the dead bodies of DeLong and his companions on March 23, 1882, half a year after their deaths. DeLong and two men lay at some distance from the main camp, where seven other bodies were found. He searched in vain for traces of Chipp and the crew of the second cutter.

already travel-stained clothing was rendered still more uncomfortable by being saturated with blood and fat.

Returning to the camp with their walrus hides and blubber, they explored the ridge lying behind the spot, and were fortunate in finding some moss, which they carefully gathered and carried away to assist in the building of the hut. The walls they had made of the stones allowed for an internal space of about ten feet long by not quite six feet wide. The crevices between the stones they filled in with moss and gravel, and then stretching the walrus hides over the ridge-pole, they weighted them down with more stones. Over all of it they heaped snow and ice and, in order to avoid suffocation by the smoke of their blubber cooking stove, they constructed an ice-chimney. This, however, did not always carry off the smoke, while it frequently thawed at the base, and made the interior very draughty. Their guns and other articles and stores they placed inside the hut, leaving the kayaks outside; and when everything was stored conveniently, they built a wall before the door as a screen to break the wind, and hung a curtain of skins across the doorway. The floor of the hut was composed of stones, which no ingenuity of theirs could render smooth or even, and upon these their sleeping-bag, the fur of which was almost worn entirely away, was stretched.

The hut finished, a hunting expedition for winter provisions was in place. Bears proved to be sufficiently abundant, and they soon succeeded in getting meat enough to last them through the winter and well into the following summer. They had put this in cold storage on the top of the hut, and though during the winter they often heard foxes gnawing at the frozen mass over their heads, they let them feed in peace, knowing that they had more than they needed for themselves. Bear's meat, fried at night and boiled in the morning, was about all the food they had, and during the long winter night, when the temperature within the hut was often near the freezing point, they would frequently lie in their sleeping-bag, side by side, twenty-two hours out of the twenty-four.

A picturesque glimpse is given by Nansen of their life in his diary entry made on December 24, 1895, when the temperature inside the hut was 11 degrees below zero.

"And this is Christmas Eve; cold and blowy out of doors, and cold and draughty indoors. How desolate it is here! We have never had such a Christmas before. The bells are now ringing in the Christmas festival at home; I can hear the sound of them swinging out through the air from the church towers. How beautiful it sounds! Now the candles are being lit on the Christmas trees, and flocks of children are let in and dance round in exuberant glee. Must have a Christmas party for children when I get home. We, too, are keeping the festival in our little way. Johansen has turned his shirt, and has put the outer one inside. I have done the same, and have changed my drawers as well, and put on the others which I had wrung out in warm water. And then I have washed myself in a quarter of a cup of warm water, using the discarded drawers as sponge and towel. I feel like a new being; my clothes do not stick to my body as much as they did. Then for supper we had fish 'gratin,' made of potted fish and Indian meal, with train-oil for butter—fried or boiled both equally dry—and as sweets we had bread fried in train-oil. To-morrow morning we are going to have chocolate and bread."

Time passed on monotonously enough, the night being dimly long and dreary, but at length the approach of the sun became manifest by the gradually brightening twilight, and the arrival of a flock of little auks reminded them that spring was at hand. They celebrated the occasion by boiling their clothes, one article at a time, in the only pot they possessed, and then scraping the grease and dirt from them by the aid of a knife, so as to render them soft enough for traveling, as it was beyond the question to get them clean. The sooty smoke from the winter's cooking had thoroughly begrimed their faces, and all they could do to get clean was first to try and scrape the dirt off with the knife, and then rub themselves all over with bear's grease and wipe it off with moss.

By the middle of May the water along the shore was sufficiently open to permit of their starting in the kayaks on the journey which they expected would end at Spitzbergen. On May 19, 1896, they bade adieu to their winter camp, having packed everything on the kayaks, which they fastened together for convenience and stability. Sometimes they had to get out on the ice which blocked the channel and drag the kayaks over to the open water on the other side; sometimes they sailed and sometimes they paddled. They passed numbers of walrus lying on the ice, the great monsters paying no heed to them whatever. Once they landed on a mass of ice which rose high out of the water, in order to climb to the top of it and examine the coast line, for they were still in very great doubt whether they were off the shore of a hitherto undiscovered island or not.

They made the kayaks fast to a projecting piece of ice, and together climbed up to the top of the hummocks. As they reached the summit they looked back to the spot where they had left the kayaks, and were horrified to see them adrift. Already they were some distance away from the ice, and, being tied together, they were going rapidly down the channel. For a moment the sight held the two men motionless, for the kayaks represented their only means of escape. Everything beyond the clothes in which they stood was stored on board, and to be left on the ice without food, arms, or shelter, was almost certain death.

There was only one desperate means of salvation, and that Nansen took. Dashing down the hummock, he plunged into the ice-cold water and struck out after the retreating kayaks.

Weighted by his stiff, heavy, grease-sodden clothes, he had the utmost difficulty in swimming at all; but there was a greater handicap even than his clothes in the low temperature of the water. It struck through him with a chill which reached to his bones, numbing his muscles, and making his joints lose their suppleness. The breeze which was blowing helped the kayaks along, and increased his discomfort. Soon he felt that the fight was only a matter of min-

utes, for as the coldness numbed him more and more, he realized that unless he overtook the kayaks quickly he would go to the bottom like a stone. The cold penetrated to his lungs, so that he gasped for breath; his hands and feet lost all feeling, and his eyes were growing blurred as he nerved himself for a final desperate struggle.

Swimming as hard as his strength of will and muscle could command, he succeeded in coming within touch of the light-drifting craft. The fact that the two were fastened together was of the utmost importance under the circumstances, for had they been separate he could never have clambered into one in his benumbed and exhausted condition. As it was, he managed to get one arm over the *ski* which formed the coupling between the kayaks. His hands were too cold to grip and he hung for a few seconds resting, till the growing chill in his limbs warned him of the danger he was in of becoming frozen. With a superb effort of determination, he raised himself until he was able to lift a leg over the side of one of the kayaks, and then struggled on board, where he lay for a minute or so trying to recover his breath.

Still fearing the cold, he grasped a paddle and set to work vigorously to force the kayaks back to the ice on which Johansen was standing. The exertion caused his blood to circulate once more, and, by the time he had reached the ice, the deadly chill was out of his frame. There were no dry clothes to put on in place of his wet ones, and all that could be done was to wring them out, and then, working hard to keep up his circulation, wait till they dried on his back.

In order to prevent another such occurrence, the kayaks were freed from each other, Nansen occupying one with half the provisions and stores, and Johansen the other. Two days after the break away they had reason to be thankful they had made this arrangement. They were skirting along the ice at the time, and suddenly came upon a herd of walrus. Instead of quietly watching

them go past, as was usually the case, a huge bull slid off the ice with a roar, and swam rapidly towards Nansen's kayak.

Diving as he came near to it, Nansen anticipated that he intended rising immediately underneath it, and so capsizing it. He therefore paddled as hard as he could, when the walrus rose by his side. It reared high out of the water, towering over the kayak and its occupant, and only by the quickest of manoeuvres was Nansen able to avoid having it fall upon him. Balked in that attempt, the walrus swam alongside and, plunging its tusks through the frail covering of the kayak, strove to upset it with its flipper.

Nansen swung his paddle in the air, and bringing it down with all his strength on the monster's head, caused it again to rear in the water. Paddling furiously directly the brute's tusks were withdrawn, he managed to elude it till it sank, when he made for the ice, reaching it just in time, the water having almost swamped the kayak through the holes the walrus had made with his tusks.

When the damaged kayak was taken out of the water, the injury was found to be more extensive than at first supposed. The two explorers determined to stay where they were for a few days, so as to thoroughly overhaul and repair their kayaks, and have a good rest before commencing the difficult journey, which was to be made before they could arrive at Spitzbergen. They made as comfortable a camp as they could on the ice, and, after supper, got into the sleeping-bag and rested peacefully. Nansen was first awake, and, having crept out of the bag, set to work preparing breakfast. It was ready before Johansen was, and not wishing to disturb his comrade, Nansen put on his *ski* and set out for a "constitutional" over the ice. He had not proceeded far when he heard a sound which made his heart jump. It was the bark of a dog.

Hurrying back, he told Johansen, who, however, did not catch the meaning of his words, and then set out in the direction whence the sound had come, in search of, as he believed, a whaling ship. He had not gone very far when he saw in the distance two moving

specks. There was evidently a whaler in the neighborhood, he told himself, and redoubled his efforts. As he approached the two specks became clearer, until he saw distinctly that one was a man and the other a dog.

The man noticed him and waved his hat, to which Nansen replied by waving his; as they came nearer, he heard the man speak to his dog in English.

"How do you do?" he said to Nansen when they met.

"How do you do?" Nansen answered, as they shook hands. "Are you wintering near here?"

"Yes; our camp is over there. Won't you come across?" the other replied. "I think we can find room for you, if you will."

Nansen, never dreaming but that he was recognized, assented, although he wondered why the man did not ask him about the "Fram." Presently his companion looked at him closely and said: "Are you Nansen?"

"Of course I am," the explorer answered, and at once both his hands were clasped in a hearty grasp as his companion quickly expressed his congratulations.

"I was not certain," he explained. "When I saw you in London you were a fair man with light hair, but now your face and hair are black, and for the moment I did not know you. My name is Jackson."

Nansen had forgotten that his face and hair were still begrimed with the dirt and grease of months of travel, and that his own family might have been forgiven for not recognizing in the unkempt, travel-stained, long-haired man, the smart, well-set-up Norwegian doctor. Now, however, that he was known, he listened with great interest to the information that his companion was able to give him.

This was to the effect that he was the leader of a party, known as the Jackson-Harmsworth expedition, which had left England for Franz Josef Land in 1894, its purpose being to make a thorough

exploration of that group, and prove whether it was the southern portion of a great polar continent or a collection of islands. He had found the latter to be the case. Instead of it being comprised of two large bodies of land, as believed by the original discoverers, it was found to be an archipelago of small islands. The probability of there being a polar continent was largely set to rest when Nansen told him that he had sounded the sea to the north and found it to be from 1,600 to 1,900 fathoms deep.

As he and Mr. Jackson talked another member of the party joined them, and close behind him came four others, all of them giving the wanderer a hearty greeting. When the encampment of the party on Cape Flora was reached Nansen was photographed as he stood, in his winter garb. Then they took him into the house and supplied him with a luxury he had not known for more than a year—a cake of soap and a change of clothes.

While he was enjoying his bath, his hosts exchanged opinions. The fact that he had arrived on foot and alone suggested to them the idea that he was the only survivor of the thirteen who had set out in the "Fram," and they decided to make no reference to what might be a very unhappy memory. Consequently, when Nansen reappeared, clean and comfortably clad, they had a meal ready for him, and urged him to set to at once. He looked at them and asked where his comrade Johansen was. Had they not brought him in? Of course they knew nothing about Johansen; they believed Nansen was the only survivor, and he had been so long out of the world that it had never occurred to him it was necessary to tell them Johansen was waiting for him to return to breakfast. When two men see no one else but themselves for more than a year, it is not to be wondered at that they forget the rest of the world is not in touch with them.

As soon as he mentioned the fact that Johansen was in the neighborhood, a party at once started off to fetch him, and the worthy lieutenant was as much surprised as they had been when

they came upon him. They at once took charge of him and his belongings, and a few hours later he and Nansen, well washed, well clad, and well fed, were smoking cigars in comfortable chairs in the dining-room of the hospitable Jackson's quarters, the heroes of the occasion.

Three weeks later they were sailing south to Norway in the "Windward," and arrived at Vardo on August 13, 1896. A week later the "Fram" entered the same port, with all her crew in good health, and with nearly three years' supplies still on board.

The record of her voyage, after the departure of Nansen and Johansen on March 14, 1895, was very satisfactory. She drifted steadily in the ice towards the northwest until she touched as high as 85 degrees 57 minutes north. At the end of February, 1896, she became stationary, and remained so until the middle of July, when the crew forced a passage through the ice into open water, and from thence the "Fram" sailed to Norway. The first news the crew received on arrival at Vardo was that Nansen and Johansen had reached there just a week before. They had had some misgivings as to the safety of their two adventurous comrades, and the news of their return cleared away the only sign of uneasiness from the otherwise happy minds of the men who formed one of the most successful expeditions that has ever set out in search of the North Pole.

CHAPTER XXI

Andrée's Fatal Flight Northward in a Balloon

WE have dealt with many methods of seeking the Pole, by ship, by boat, by sledge, by floating in the ice; there is still another to be considered, that of flying through the air, one by which all the difficulties of ice ridges, ice drift, and open water caused by splitting of the ice, can be avoided. But in avoiding these there are other difficulties to be met, some of them perhaps insuperable, and the first attempt to reach the Pole by an air voyage could scarcely be expected to be more successful than the first one by the water voyage. It is this first—perhaps also the last—air voyage with which we are here concerned. The fact that the air, if it could be traversed in safety for the necessary distance, offered a field in which all the perils and delays of ice-navigation could be avoided, and the great journey could be completed, if at all, in days or weeks instead of years, and with a minimum of suffering and hardship, was one very likely to appeal to adventurous spirits.

To maintain the feasibility of such an excursion, however, was one thing; to attempt it was another. In the degree of development of navigation of the air up to the end of the last century such an enterprise did not commend itself to the judgment of the cautious. Yet a Columbus is rarely wanting when a new continent is to be discovered or a great feat of any kind to be performed, and the Columbus in this instance was S. A. Andrée, a Swedish engineer, who set out in the summer of 1897 on a singular and daring enterprise, one which, despite its promise, was filled with perilous elements and threatened by all the terrors of the unknown.

This daring attempt was one of so much interest that an account of it will doubtless be read with interest, despite its failure to attain its end. Solomon August Andrée was born in the town of Grenna, Sweden, in 1854, was educated in the technical college of Stockholm, and after engaging in the iron business, entered the field of engineering. He next became a teacher of physics at the college at Stockholm from which he had graduated and subsequently chief engineer of the Patent Office of Sweden.

During this period he was active in other ways. In 1881-82 he joined an expedition to Spitzbergen under Dr. Ekholm, with the purpose of making scientific observations, and at a later date crossed the ocean to Philadelphia to study the oceanic conditions of the atmosphere. He was gathering information likely to be of use to him in his later career. One thing that struck him in this voyage was the regularity of the currents of air near the ocean surface. From this he deduced that the upper currents would be still more uniform and that it might be possible, by taking advantage of them, to cross from Europe to America in a balloon. Such was the primary step toward the famous enterprise which he was afterwards to undertake.

He continued his study of atmospheric conditions, his brother Ernst, a sea-captain in the merchant service, making observations for him in all parts of the world. To study the currents of the upper air he made a number of balloon ascents with Coelti, a prominent Norwegian aeronaut, in this way gaining useful experience in the art of ballooning.

We have said that Andrée had the spirit of a Columbus, and that not without warrant, for he had conceived the daring plan of following in the air the path of Columbus through the waves, his project being to cross the ocean in a balloon from the Cape Verde Islands to Venezuela. This was for the purpose of proving that long voyages in the air could be safely made.

Spending the summer of 1893 with his sailor brother at Göte-

borg, the details of the plan and the probable aid of the air currents were worked out between them, their calculations leading to the conclusion that the distance could be traversed in ninety-seven hours. Their study was as thorough as it could be made with the imperfect data at their command, and the results were submitted to several of the Swedish scientists, including the explorer Norden-skiöld, one of whom said:

"If you have faith in such an undertaking, why not rather set out from Spitzbergen and try to reach the North Pole?"

This first put the great project in which he afterward engaged into Andrée's mind, a project among the most daring and adventurous that man had ever undertaken, considering the state of aeronautical science at that period. Full of his new scheme, which appealed strongly to his enthusiastic soul, he began a series of experiments in aeronautics, obtaining a sum of \$1,400 from a memorial fund at Stockholm to assist him. In one of his ascents he crossed the Baltic, with great peril to his life, in a small balloon.

His great project was first publicly made known in a lecture before the Royal Swedish Academy of Sciences in 1895, printed with the title of "Proposed Plan of an Expedition to the North Pole in a Balloon." In this lecture he said, referring to the fact that so far the polar explorer had used only one means of travel, the sledge:

"The fact remains that in attempting to push on over the polar ice we have lost numbers of men, ships, and money, and several hundred years of time, without having succeeded in crossing the icy desert and reaching the Pole. Is it not time to examine this question and look about for some other means of transportation than the sledge? Yes, it is time, and we will not have to look far to find the means that is particularly adapted for such purposes.

"This means is the balloon. Not the ideally perfect steerable balloon that is dreamed of and worshipped but has never been seen, but the balloon that we really possess and that is judged so unfavorably while only its weak points are noticed and emphasized. Such

a balloon is good enough to carry the explorer to the Pole and back again. With such a balloon the voyage across the icy desert *can* be accomplished.”

Had he waited some ten years more he would have found the steerable balloon to which he referred developed to a state of considerable perfection, but his enthusiasm was too great to permit delay.

Andrée was a delegate to the Geographical Congress at London in July, 1895, and presented to it his plans with much elaboration. His arguments were received with considerable favor, some of the delegates becoming quite enthusiastic. One of these was Markham, the leader of the exploring party of the Nares expedition, who supported him strongly and said that he would like to go with him himself. Nordenskiöld also remained a faithful supporter of the project, and also Nils Ekholm, one of the ablest meteorologists of Europe, who showed his faith in the scheme by agreeing to go with him. On the other hand, many men of experience in Arctic affairs descried the daring project, predicting certain failure and the inevitable death of the adventurer and all who joined him in the rash attempt.

He found the necessary financial support, however, without difficulty, the required sum, \$36,000, being quickly raised by a public subscription, the King of Sweden heading it with \$8,000. Meanwhile Andrée continued his experiments, spending the winter of 1895-96 in France and England and making many ascents with French aeronauts. The balloon for his enterprise was constructed at Paris under his close supervision, it costing about \$10,000. It was about seventy-five feet in height and had a capacity of 6,000 cubic meters of gas, it being intended to lift a weight of three tons, consisting of the aeronaut and two companions, provisions for a year or more, scientific and other apparatus, and the requisite mechanism and chemical materials to manufacture a new supply of gas in the polar regions, if necessary. The balloon was enclosed

with heavy cordage, so as to enable it to resist the action of the sun. An ingenious contrivance for direction motion was added. This consisted of a rubber sail secured to the apex of the balloon, with a rope leading to the car. In addition was a guide rope, which was intended to drag on the ground or in the water, arrangements being made to adjust it to different positions for 180 degrees of the circumference of a ring attached to the car.

In the manufacture of the balloon three thicknesses of silk were used, with varnish to bind them together and three thicknesses of varnish on the outside. The gondola or car, which hung about twenty-five feet below, was about five feet deep and six and a half feet in diameter. It was made of wicker-work lined with varnished silk, and was capacious enough to allow one of the aeronauts to sleep while the others were on the alert. A lid of basket-work covered it, with a trapdoor in it by which the car could be entered or left. While at work the men were to stand upon this lid, having a large ring, waist high, to protect them.

The cooking apparatus was ingeniously devised to prevent danger of firing the inflammable gas of the balloon. It was done in a copper cylinder let down from the car, an alcohol lamp supplying the heat. This could be lighted by a mechanism in the car and blown out by means of a rubber tube, while a reflecting glass enabled the cook to see if it was burning.

The guiding and steering apparatus represented the best means that could be devised for this purpose before the advent of the dirigible air-ship. The guiding ropes were of different lengths, the shortest measuring about one thousand feet and the longest about twelve hundred. These were intended to hang from a bearing-ring just outside the car, and, when the balloon was not too high, to drag on the ice or the ground. Experiments with this device in July, 1895, showed that when the rope was attached to the central eyelet the balloon moved in the line of the wind, but when attached to one or the other side its course was changed by a considerable

number of degrees. The sail could be adjusted to aid materially in this result, and it was thought that by its use and the rudder-like effect of the dragging rope a tack of thirty degrees could be made. It was intended to so manipulate the gas and the basket as to keep the balloon about five hundred feet above the surface.

A large number of carrier-pigeons were taken along to be sent back with any important news. A supply of cork buoys was also taken, each having a vertical shaft with a small Swedish flag attached to it. In the center of each buoy was a small water-tight metal box, in which a letter could be placed before it was thrown overboard. Such buoys might float for months or even years before they came ashore or were seen and picked up at sea.

The locality chosen for the start was Danes Island, one of the northwestern islands of the Spitzbergen group, the proposed time for the start being the month of July, 1896. Andrée's chosen companions were Dr. Nils Ekholm, a meteorologist of high standing, and Nils Strindberg, an amateur photographer who was eager to take part in the trip. These two had made many of the instruments taken in the balloon.

The spot chosen for the ascent was Pike's house, built by an English sportsman in the northern part of the island. Here an octagonal building was erected and the balloon inflated by its maker in the latter part of July, 1896. All was ready by the 27th, but the favoring south wind desired failed to blow. They waited impatiently for the wind to change to the right quarter, but it blew steadily from the north, and at the end of the first week of August it was decided that the season was too far advanced to warrant a start. The disappointed explorers accordingly sent their materials and apparatus to Tromsø to be stored and returned to Stockholm to wait the coming of another summer.

The necessary funds for a new expedition were easily obtained and the king now placed a Swedish gunboat at Andrée's disposal to aid him in his effort. But during the winter Ekholm withdrew

from the party, either fearing the result or on account of being recently married and in response to his wife's fears. He was replaced by Knut Frankel, an able engineer, whose aid Andrée was glad to obtain.

The new start for Danes Island was made early in June, 1897, and on the 19th the work of inflation of the balloon began. Its surface was thoroughly examined to check any leakage or repair any weak spots that might appear, all the work being pressed forward with great rapidity. Last of all, the inflation being finished, the car was attached to the balloon, which was held down by three strong ropes. All was ready for the great ascent.

Andrée's last act on the 11th of July, the day of the ascent, was to write two messages, which were taken to Tromsö and telegraphed to Stockholm. One read:

"To Aftonblast:

"To-day, Sunday, at 10.35 A. M., we began preparations for departure, and are ready now, 2.30 P. M. We shall probably be going in north and northeast direction and expect by and by to come into regions with more favorable wind conditions than here. In the name of all my associates I send warmest greeting to fatherland and friends.

ANDREE."

The other was to the king:

"VIRGOS HARBOR, July 11, 2.35 P. M.

"To King Oscar:

"In the moment of departure the members of the polar expedition beg your majesty to accept our respectful greeting and warmest thanks.

ANDREE."

Everything ready and the moment arrived, the members of the expedition shook hands cordially with those who were there to see them off, the latter showing more emotion than the three explorers themselves, of whom only Strindberg manifested any signs of

anxiety. Entering the car and examining to see if everything was in order, the leader called, "Strindberg!" Strindberg stepped upon the car. "Frankel!" Frankel followed. "Come!" said Andrée in a cheerful tone. The sailors appointed to cut the holding cords first released those that held the center of the balloon. It immediately began a rolling motion, and they had to wait until it should come to a partial rest. "Cut!" then cried Andrée. The knives were plied; the ropes parted; the balloon shot up three hundred feet into the air.

A loud cheer and cries of "Happy Voyage" came from those left behind as they watched the course of the great balloon. Its first movement was a swoop downward until it nearly reached the surface of the water, then it rose again before the violent wind that was blowing and shot away at great speed, the three explorers waving their handkerchiefs as it swept from the land out over the Arctic Sea. In about half an hour it vanished from the view of the spectators, though they continued to wait for some time longer in hope that a last glimpse might be obtained, some of them, doubtless, fearful that they had gazed for the last time upon their late companions.

An incident of an unfortunate character happened at the start. As the balloon bounded upward two of the guide ropes, a considerable length of which trailed upon the ground, yielded to the tension caused by the quick bound and friction with the surface, and broke. Only that this possible accident had been provided for, these indispensable aids would have been lost at the very start. Foreseeing such a mishap, Andrée had the ropes constructed in sections of about one hundred yards each, joined with screws. It was the lower sections that gave way, so that fortunately the accident did not prove serious.

The utility of the guide ropes was evident to the spectators, since, though the wind was south-southwest, the explorers succeeded in laying their course nearly due north. They also aided

in keeping the height uniform. The only peril encountered was from an ice-clad hill, six hundred feet high, which lay in their path. But when the balloon neared this it rose and soared over it like an enormous bird, keeping steadily to its distance from the surface. When finally all hopes of catching another glimpse of the balloon were at an end, the spectators turned away, glad that the opportunity had been theirs of seeing so unusual an event.

The explorers had set out prepared to face a possibly long detention in the frozen world. In the car of the balloon they carried weapons, ammunition, and material suitable with which to build a shelter, should the balloon collapse and leave them on the ice. An aluminium boat was also carried, so that the party could escape by sea if necessary. Of the carrier pigeons taken with them, to be liberated at intervals on the passage, nothing certain was afterwards known. Although one pigeon is said to have been shot in the far north, it is doubtful whether it was one of the Andrée birds.

The balloon, when it went out of sight, was traveling at a speed which would have carried it over the Pole in a few days, and probably have enabled it to descend in Siberia or America in about a week. For the first fortnight after it had started, therefore, interest all over the world was keenly excited for further news. But the fortnight passed without any reliable intelligence being received, and a month followed, and so on until a year had gone by. Then relief and search parties were talked about, and the Swedish Geographical Society sent one out to look for the missing balloonists in Siberia. It did not meet with Andrée, nor did it obtain any reliable information respecting him.

News was published to the effect that some outlying hunting tribes had come upon a huge bag, having a mass of cordage attached to it, together with the remains of some human bodies. The Russian, Swedish, and Norwegian governments immediately sent forward auxiliary search parties, but their only success was to trace the origin of the report, and find that a Siberian trader had, in a

moment of mischievous humor, hoaxed a too confiding telegraph agent.

Later, on September 12, 1899, a Swedish sloop, the "Martha," reached Hammerfest with the information that a buoy, branded with the name of the Andrée expedition, had been found to the northeast of King Charles Islands. The buoy had lost the screw-plug from the top, and had been so damaged by coming in contact with some hard substance that the interior cylinder was too dented to permit of an examination being made of the inside.

It is still possible that one of the buoys taken by Andrée may be discovered containing a record of his doings from the moment he disappeared with his balloon sailing towards the north. But it is very unlikely, and it is scarcely probable that any sign will ever be discovered of the balloon or its occupants. For years the frozen north held all traces of the Franklin expedition from the eyes of the searchers who were able to conduct their operations along the route they knew Franklin had followed. No search party can knowingly follow the route Andrée and his comrades took. Their fate will probably be forever a mystery, for so many things might have happened that no one theory can claim for itself more probability than another. All that is certain is that the party went out of sight drifting towards the north. They carried their lives in their hands, and knew that they did so. Had they succeeded, they would have achieved a mighty triumph; they failed, and in doing so set their names as indelibly on the scroll of Fame as any hero who has laid down his life in the contest with the measureless mystery of the Pole.

In a lecture delivered by Andrée in April, 1896, he had used the following words: "If our expedition should return home without success, or even if we should perish, it will not be long before a new balloon expedition will be started for the same purpose as ours. This idea has taken so mighty a hold on the human mind that it cannot be quieted. It will necessarily appear again with the full strength of a natural law."

In this conjecture he was not astray, for in less than ten years after his venture a similar project was devised by an American explorer. This was Walter Wellman, an enterprising western journalist, who had made an unsuccessful polar expedition by the Franz Josef Land route in 1899. A few years later he proposed to take advantage of all the progress made in ballooning and air-ship experiment since Andrée's unfortunate effort in an attempt to reach the Pole, and was very hopeful of success.

The air-ship, or dirigible balloon, built for him at Paris, was the largest which had been constructed to that time, and was taken by him to Danes Island, Spitzbergen, in 1906. He had selected this island, as Andrée had done, as the most available starting point for such a voyage. His air-ship was 183 feet long, 52½ feet wide, had a 20 horse-power engine and two propellers, one on each side. It had also a complete sledging outfit and a combined boat and car, these to be used in case of accident to the balloon. It was supplied with fuel and food sufficient to last five persons for a considerable time.

He proposed to start in the summer of 1906, hoping to reach the Pole in a few days. But before the time of starting arrived serious mechanical defects were found in the apparatus, of a character that would have exposed the explorers to great danger. The air-ship was accordingly taken back to Paris for reconstruction, the expedition being delayed for another year.

In 1907 the air-ship, with its defects remedied, was taken again to Danes Island. But the weather proved seriously detrimental to the enterprise, furious gales blowing and the general conditions being so unfavorable that a second postponement was felt necessary. In the following year further improvements were made, and the great air-ship, capable of carrying 19,000 pounds and making twenty miles an hour by the aid of its powerful engines, was again got in order for a flight, a trial trip, which proved its efficiency, being made. It was then too late in the year to start for the Pole, and 1909 was fixed for the date.

In the summer of 1909 Mr. Wellman for the first time succeeded in getting a send off for the Pole. He did not go far, the journey suddenly ending for a reason like that which had imperilled Andrée's voyage at its start, the breaking of his guide-rope. Wellman had a long and very heavy rope attached to his car, not as a rudder but as a drag to counterbalance the ascending power of the balloon. It was intended to trail on the ice, so that, if the air-ship should rise and lift it upward, the weight of the part in the air would increase so as to limit the degree of ascension and keep the height practically uniform. The drag-rope weighed about 1,400 pounds, its weight being increased in an ingenious manner. It was a hollow tube of leather in which a considerable part of the food supply was packed. Outwardly, in its lower part, it was covered with overlapping steel scales, so that it could slip easily over rough ice.

It was this weighted rope that proved disastrous to the expedition. The strain of the first sudden rise of the air-ship caused such a tension that the rope parted near the car, its total length being lost and the balloon darting rapidly upward into the air. The often deferred expedition was again at an end. To venture onward without the drag-rope would be like a ship venturing to sea without its rudder, and it became necessary to bring the apparatus to land again, a feat which was accomplished with some trouble and risk.

It would be rash, indeed, to say what can or cannot be done in the future to utilize the still developing methods of aerial navigation in the work of polar exploration. A great deal of discussion was occasioned by Count Zeppelin's projected flight northward in a balloon, and many interesting theories were brought out as to the chances of such an expedition achieving success. All of these theories are, of course, chiefly speculative. Suggestions have also more recently been put forth for an attempt to reach the Poles by the use of aeroplanes. Such an idea is not acceptable to most minds, but doubtless there could be found many daring—some would say foolhardy—men who would be willing to undertake the adventure if provided with the necessary equipment and organization.

But while we cannot say definitely that a balloon or *aéroplane* could or could not safely reach the Poles now or at some future time, we can say that there now seems small probability of such an event. Besides the limited degree of reliability which has been thus far attained in *aéronautics*, there is also to be considered the fact that the mass of experience which has been accumulated in the use of dogs and dog sledges, and even of ponies and motor sledges, is far too valuable to ignore in future polar expeditions. When we consider the almost insurmountable difficulties that lie in the way of progress through the ice and snow and terrible blizzards encountered in polar work, even when the undertaking is made with rugged animals and substantial sledges, it seems that success is much less probable when these accessories are forsaken for relatively delicate balloons and *aéroplanes* which would have to face untested perils in the driving storms and ferocious head winds existing both in the Arctic and Antarctic Zones.

CHAPTER XXII

Abruzzi, the Royal Italian Explorer

IN the year 1899 a new nation entered upon the work of polar exploration. Hitherto the work had been confined to the Americans, English, Scandinavians and Russians and the people of the south of Europe had taken no part in it. But now Italy stepped into the field, in the person of the ambitious and adventurous Duke of the Abruzzi, a cousin of King Victor Emmanuel of Italy. In 1897 the duke had begun a career of exploration by proceeding to Alaska and climbing to the lofty peak of Mount St. Elias, which he was the first to reach. He now grew eager to reach another peak, that of the earth at its northern extremity.

Realizing, however, that the Italians had had no experience in the ice-clad seas and had no vessels specially adapted to the kind of navigation before him, he wisely availed himself of the experience and equipment of the Norwegians. Buying the old sealing steamer "Jason," of Norwegian build, he had it refitted for polar work, giving it the new name of "Stella Polare"—"Polar Star." He also availed himself of the valuable aid of Dr. Nansen in arranging his plans and preparing his equipment and very wisely added a quota of Norwegians to his crew, it being composed of ten of the sons of Italy and ten of those of Norway. His plan of action was to sail as far north as possible, establish winter quarters upon some far northern coast, and seek in the spring to reach the vicinity of the Pole by sledge journeys.

Abruzzi was availing himself to the utmost of the work of his predecessors. In addition to the valuable advice and aid of Nansen, he took advantage of the camp established in Franz Josef Land by

the Jackson-Harmsworth expedition, and in his purpose of making sledge dashes northward he was following the plan laid down by Peary and Nansen.

Reaching Archangel, in Northern Russia, the "Stella Polare" was headed northward for Franz Josef Land, and in August, 1899, reached Cape Flora, Jackson's headquarters, in latitude 80 degrees north. It was here that Nansen had been rescued and entertained. The huts of the former occupants were found standing intact, and Abruzzi stocked them with provisions for a food depot and pushed northward through the British Channel.

On reaching latitude 80 degrees 30 minutes the "Stella Polare" was met by the "Capella," Walter Wellman's ship, then sailing southward after an unsuccessful voyage north. Wellman, however, had done some good work in exploring and mapping the Franz Josef archipelago. The two exploring parties exchanged visits, after which each set out on its special course, the one southward to civilization, the other northward to desolation. The British Channel and the waters north of it proving unusually free from ice, the "Stella Polare" was enabled to steam beyond the eighty-second degree of latitude to a position near the shores of Crown Prince Rudolph Land, the western coast of which had been visited by Payer in 1883 and the eastern coast by Wellman in 1899.

The ship was now at or near the northern extremity of land in that region, and as the plan of the expedition was to establish headquarters on some suitable coast, making this the base for sledge journeys northward, Teplitz Bay, on Prince Rudolph Island, in latitude 81 degrees 53 minutes, was selected as a suitable place for wintering, and the ship was taken in and anchored near enough to the shore to permit the easy landing of stores.

Teplitz Bay is open towards the south and west, the land on the north being level but rocky. A leader of more experience in Arctic navigation would have had doubts as to the security of the situation as a place for a ship to lie exposed to the winter movements of the

ice. With the bay open on two sides, it was scarcely possible for it to escape from the pressure of moving floes outside; but the opinion was held that the ice along the shores was strong enough to withstand any pressure from the open sea, and so the "*Stella Polare*" was moored to the shore. Their trust was nearly to prove fatal.

Brief journeys along the coast and over the highest land which could be reached, an elevation of 2,900 feet, effectually disposed of the claims of Peterman Land and King Oscar Land, islands placed on the map by the Payer expedition. Nansen also had failed to find these islands, and it seemed certain that the former explorers had been deceived by massive bodies of ice, resembling land.

By September 7th the work of preparation for wintering in this situation was completed and the explorers made merry over their success to this date and hopefully discussed the prospect before them. The difficulties which beset other explorers, often from the very commencement of their journeys, had not been experienced by them, and now, with their vessel almost as high to the north as any vessel had yet been, with their complete outfit at one of the most northerly stations yet established, and with everything snug and secure for the winter, it is not surprising that they should have allowed their enthusiasm to run away with them. It was the first time that Italy had entered into the contest of winning fame from the mysteries of the Arctic, and the outlook was so rosy that they were not without dreams of carrying the flag to the Pole itself and showing to the world that the all-conquering spirit of ancient Rome still animated the race. Their Norwegian comrades, men of colder temperament, felt like postponing the triumph until the battle was won, but the enthusiasm of the southern nature could not be repressed.

They were soon to gain a truer idea of the task before them, and to learn the unsafe conditions of their situation. An ice-floe, drifting in the sea beyond the bay, caught the edge of the shore ice, in which the "*Stella Polare*" lay at rest, as it passed. The ice

yielded to the strain, and along its length was uplifted a ridge of hummock ice. The line of pressure passed through the spot where the "Stella Polare" was made fast. The hummock rose against her bows and forced her ninety feet away from where she had been, while, at the same moment, an increase in the pressure caught her by the sides, heeled her over, and cracked her timbers till those on board rushed to the deck under the belief that the vessel was about to collapse. The rigging of the foremast was torn away, the planks of the exposed side showed spaces of three inches between them, and water poured into the hold so rapidly that it was feared the ship would go down. The hand-pump was manned and worked, while the fires were lit so as to get up steam and set the steam-pump going, every one who was not required for these jobs working vigorously to get all stores out of the ship and on to the ice, lest she should go down and leave them stranded and foodless. The Arctic was giving a characteristic and rugged greeting to the visitors from the South.

The stores were landed with the greatest rapidity, the activity with which every one worked being still further stimulated by the news from below that the hand-pump, which was being worked by four men, could not keep the water back, and that already it was almost touching the bars of the furnaces. At one time it looked as though there would be no chance of saving the fires, and had the water once reached them and so prevented steam being got up, the plight of the explorers would have been critical in the extreme. As it was, the Norwegian engineers worked like heroes, and managed to make enough steam to start the steam-pump just as the water touched the fires in one of the boiler furnaces. The steam-pump, assisting the hand-pump, was sufficient to keep the water from rising further, but not enough to keep it back altogether. Neither the steam nor the hand pump, by itself, could prevent the water from rising. Both had to be kept going, since if the water should reach the fires and put them out the effort to save the ship might have proved hopeless.

They worked on with a brave persistence, Italian and Norwegian alike, until they had all the stores out on the ice, together with spars, ropes, sails, and all other things needed for the construction of a shelter in which to pass the winter, if it should become necessary. This was only completed after twenty-four hours of toil, and when it was finished the worn-out party sought a brief respite in sleep. As soon as the pumps ceased working the waters rose rapidly in the holds and over the furnace bars, putting out the fires. Contrary to expectations, the ship did not go down, the ice being sufficiently strong to sustain it from sinking, so that the water stopped rising when it had covered the furnaces.

Although the ship was now secure from sinking, it had heeled over to such an extent that it was impossible to remain on board, and a hut was erected on shore, around which the stores were stacked for the winter. For ten days the entire party labored at this work, and when it was finished it was realized that all the plans for the preliminary sledge trips must be abandoned. Instead of giving attention to reaching the Pole, it was first of all necessary to see what could be done in the way of repairing the ship so as to keep it afloat when the supporting ice should give way.

A close examination revealed the fact that the severe pressure had considerably affected the form of the ship. The crank shaft was bent out of the straight, and the heavy iron beams which had been put in to strengthen the vessel amidships were all bent and twisted. The planks at the sides were started and gaped open in many places. The water which had made its way in had frozen, so that the furnaces were covered by a sheet of solid ice, while the same thing existed in the hold. As the hand-pump could not lower the water alone, it was decided to use a boiler and pump which formed part of the balloon equipment. Although the use of these articles effectually terminated any hopes of balloon experiments, it enabled them to get the water down sufficiently to permit of repairs being effected. From the beginning of October to the middle of

November the work of repairing fully occupied the crew; but they succeeded in making the ship water-tight and available for departure when the winter should pass. The bay, by this time, was frozen over sufficiently to preclude any fears of further nips occurring.

On November 20th the last vestige of daylight vanished, and thenceforward the explorers were in the gloom of the Arctic night. A heavy snow-storm entirely covered the dog kennels, so that the animals had to run loose for a time. This was not satisfactory, for those of the creatures which were unable to squeeze into shelter near the hut, were frozen to the ice as they slept. To overcome this, big holes were dug in the ground, the dogs were driven in, and the entrances walled up. But the Arctic dog is a creature of resource, and when the men in charge of them went in due time to feed the animals, it was found that they had made an outlet for themselves by burrowing through the snow, and were again at liberty. A wall of biscuit tins was now built round the inside of the holes, and the entire mass frozen by pouring water over the tins. But the dogs again burrowed their way out, and they were then left to their own devices, the holes being left open, so that there should be some shelter available for the dogs if they liked to use it. This most of them did not like, preferring to squeeze in between the sides of the hut and the kitchen, where they contributed their share to the entertainment by occasional howling choruses during the long dark hours of the winter.

During the long night the plans for the sledge expeditions to the North, which had been so effectively interrupted by the nipping of the ship, were further considered. As the original scheme could no longer be carried out, a modified plan was adopted. Under this, it was determined to send out three parties, which were to start about the middle of February and press forward towards the Pole. Each party was to consist of three Italians. One was to carry provisions for thirty days, the second for sixty days, and the

third for ninety days. The second and third parties were to carry kayaks. An advance party had been sent out early in the month to establish depots of supplies on the proposed route. It returned in a few days, having accomplished its purpose.

It had been intended that the Duke of the Abruzzi should lead the detachments as the head of the third party, the one which would have the honor of proceeding the longest way; but early in January he had two fingers of his right hand frost-bitten so severely that the two top joints had to be amputated. This debarred him from taking his place at the head of the enterprise, and he appointed Captain Cagni to the lead in his stead. The other parties were commanded, the first by Dr. Cavalli, and the second by Lieutenant Querini. A fourth party was to follow the other three for a couple of days, as an auxiliary, so as to allow of a saving in the consumption of provisions carried by the others. It was also arranged that twenty-five days after the start of the expedition, those of the company who remained behind at Teplitz Bay should send a watch party to Cape Fligely, in order to be ready to set out and meet, and, if necessary, render any assistance which the returning members of the first detachment might require. From the top of Cape Fligely a distance of eight miles could be seen over the ice to the north, and a signal-post, erected on the cape, would be visible as a guide to the returning explorers as they approached over the ice. The watch party was to be on the cape again fifty-five days after the departure of the third detachment.

The date of departure was ultimately fixed for the 18th of February. The detachments, when ready to start, numbered, in all, twelve men, with thirteen sledges, drawn by one hundred and four dogs, each sledge weighing, with its load of provisions, six hundred and seventeen pounds. The weather, at the time of the start, was intensely cold, there having been a gale blowing for some days before. When all was ready for the march to begin, the detachments set out, after hearty farewells from those who remained be-

hind, and who watched them slowly pass out of sight over the ice and into the cold mysteries of the white region lying towards the north.

The camp at Teplitz Bay was strangely quiet after their departure, the absence of the dogs, no less than the absence of the men, rendering the place lonely and deserted. It was not expected that the auxiliary detachment would be back again for some days, and it was with very great surprise that the Duke, while walking near the hut one day, heard the sounds of dogs barking near at hand. He hastened in the direction whence the sounds came, and was astounded to see Lieutenant Querini coming towards him. Immediately he came to the conclusion that disaster had overtaken the expedition soon after starting, and that the lieutenant was the bearer of ill news, if not the only survivor of the detachment.

The facts were, however, not so bad as this. What had happened was that the cold had become so intense, after leaving Cape Fligely, that not only the men, but the dogs also, suffered severely, and were almost incapacitated. The experience of a few days revealed many points where improvement could be made in the arrangement of the sledges and their loading, and the commander, realizing that only valuable time would be lost, and perhaps the entire expedition jeopardized, by pushing on under the circumstances, decided to return to the main camp, so as to overhaul the arrangements, and reorganize the detachments in the light of their experience.

By the time the detachments were again ready to start, February had passed and March 10th had arrived. The loss of time, consequent on their return, necessitated an alteration in the program of all the parties, and when they set out the second time the order of march was for the first detachment to return after twelve days' march, the second in twenty-four, and the third in thirty-six. The detachments were also varied, so that the main detachment should number four instead of three men. A Norwegian, the engineer

of the ship, was included in the first detachment at his earnest request.

The second start was made on Sunday, March 11th, and this time there was no turning back. On March 28th, Abruzzi went, with the watch party, to Cape Fligely, and constructed a shelter in which they could remain in readiness to greet the first detachment on its return, the date of which was expected to be April 4th. On that date, and for some days before, an anxious watch was kept from the lookout point towards the north, but no signs were seen of the returning explorers. For a day or so this did not cause any grave anxiety, as it was quite possible that there might be a brief delay, but as the days went by without a sign, and the days grew into weeks, there was serious uneasiness at the continued non-appearance of the men.

The time arrived when the second detachment was due, and still the watchers saw no signs of the returning men. Uneasiness gave place to grave anxiety, and the few who remained at the camp were beginning to wonder whether they would be obliged to return home alone, with only a tale of loss and disaster to bear to their country, when a man of the second party reached the camp in a state of great exhaustion. His story was that his detachment, the second, had parted with the third on March 31st, and had been successful on the return journey up to April 15th, when an open channel in the ice near the island had stopped their march. For days they had sought a way round it, but, failing, the leader had despatched the man in the kayak to reach the watch station, and summon the assistance of a boat party, to convey the remainder over the channel. The man had attempted to land at a point where the ice was some fifteen feet high, but while he was testing it to see if he could clamber up, the kayak slipped away from him and left him clinging, with no hope of escape if he should slip into the water below.

He was one of the Alpine guides, and with his ice-axe he

managed to cut a way up the ice to the summit, though the struggle was a terrible strain on his strength and skill. When, at last, he reached the summit, he was met by a new difficulty. He did not know where he was, nor in which direction the camp lay. He was without food, or refreshment, but he made his way to a higher point, from whence he was, fortunately, able to see the top of the ship's masts showing over the ice. This gave him the direction of the camp at Teplitz Bay, and he made his way thither, with as much speed as he could. When he arrived, he had been battling his way for over twenty-four hours, from the time he lost his kayak, a feat of very great endurance.

In answer to anxious questions as to the first detachment, he said he and all the rest believed the first detachment was in the camp, for it had left the main body in time to reach Cape Fligely by April 2d. At the time it started back, owing to the drift of the ice, the island could be distinctly seen, so that there could be no difficulty as to the men knowing which way to go. Moreover, a change had been made in the command, and the first detachment had left under the command of Lieutenant Querini, Dr. Cavalli having been placed at the head of the second detachment owing to his showing greater staying powers on the march than the lieutenant.

As soon as the rest of the detachment had been conveyed from the ice pack to the camp, Dr. Cavalli corroborated the story and shared, with the rest of the expedition, the anxiety at the non-arrival of the little band. His detachment, he said, had parted with the main party on March 31st, and had seen Captain Cagni and his companions continue their way to the north, with a train of six sledges and forty-eight dogs. The first detachment might, he suggested, have been carried away to the east, and, as they had no kayak with them, they might have been cut off by an open channel and so prevented from reaching the island. Relief parties were immediately sent out to search the ice in that direction, and

also to see whether the men had taken refuge on the islands further to the northeast, where Nansen and Johansen had passed their winter. The search was continued until May 10th, when the parties returned, having searched far and wide but without finding any trace of the missing detachment. It was then hoped that they had made their way to Cape Flora, where there was an abundance of food and other necessities, but when the "*Stella Polare*" touched there, on her way home, no signs were found of the missing men, and it was then realized that they were lost. How, or when, or where, they had met their end, no one could form any opinion. A break in the ice may have precipitated them into a channel; cold may have overcome them as they slept; moving hummocks may have overwhelmed them, or a sudden snow-storm may have caused them to lose their direction, and have led them into dangers they were not able to escape. When no trace could be found of them, and no vestige of their outfit discovered on the ice, or the islands, there was only one thing the survivors could realize, and that was that their comrades had gone out of the world in silence, in mystery and in sacrifice to the knowledge of humanity.

As the month of May gradually passed, the members of the expedition gathered at Cape Fligely so as to maintain a steady watch for the return of the main detachment. In addition to the watch party there was also a party at Teplitz Bay, and word was sent from one place to the other as the days went by, while short journeys were constantly being taken along the shores on the lookout for the return of Captain Cagni and his companions. The provisions they had with them were calculated only to last until May 26th, but the leader had expressed his intention, if he had not succeeded in reaching far enough to the north, of proceeding on reduced rations so as to attain as high a latitude as possible before returning.

On the reduced scale they would be able to subsist until June 10th, but when that date arrived and still there was no sign of them,

the remainder of the expedition became alarmed. The disappearance of Lieutenant Querini and his companions did not tend to alleviate their anxiety. A week passed without any sign; June 20th came and went, and the next two days saw the little community depressed and sad at what they regarded as the fatal silence. On the 23d they barely exchanged words with one another, lest they should add to each other's sorrow by expressing the almost hopeless fear that every one felt.

On the evening of that day the watch party at Cape Fligely had retired to their shelter when they heard the barking of dogs. Hastily going outside, they saw a man, with a sledge, advancing from the direction of Teplitz Bay. They waited in silence for him to come up, fearing he brought news of disaster. But their fears were turned to joy when he shouted the news that the third detachment had safely returned to camp, having penetrated as far as 86 degrees 34 minutes north, and so established the "farthest north" record of any expedition yet despatched to the Arctic. It was twenty geographic miles farther north than Nansen had reached.

The story Captain Cagni had to tell was one of persistent courage and determination. The straits to which he and his companions were reduced were shown by the condition of their equipment. They had a single sledge in a very damaged state, a bottomless saucepan, a broken cooking lamp, and a ragged tent. Their dogs were reduced to seven, the others having been killed to feed the survivors as well as the men. On the return journey the drift of the ice had carried them to the west, so that when they reached the latitude of Teplitz Bay they were many miles to the west of it. The condition of the ice had compelled them to go still further away before they were able to turn and head direct for the camp.

From March 11th to April 24th they marched steadily towards the north, and covered something like six hundred miles in ninety-five days. For the whole period of 104 days they marched 753 miles. During the first stage of the journey they maintained a

speed of five miles a day, but during the second stage they doubled that, and covered, on an average, ten miles a day. From their experience they argued it was impossible to reach the Pole from any such base as that at Teplitz Bay while dog sledges were the only available means of transport.

With the return of this detachment the work of the expedition was at an end. The vessel was freed from the ice after a little difficulty, and, proving to be seaworthy, steamed out of the bay on August 14th. They arrived at Hammerfest without mishap on September 5th. They were given a most enthusiastic reception on their return to Italy, having given that country the honor of reaching the "farthest north."

CHAPTER XXIII

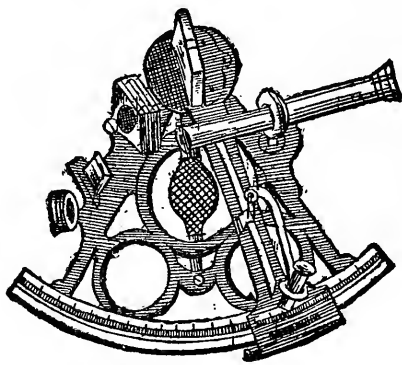
Interesting Scientific Work in the Polar Regions

THE scientific methods used by a polar explorer in determining his position are practically the same as those employed by a navigator in ascertaining his location at sea. The instruments are the same in design, but necessarily vary slightly in construction on account of the rough usage and extremely low temperatures to which they are subjected.

The most important of these instruments is the sextant, a lightweight, portable instrument for measuring the altitudes of the heavenly bodies, the sun, moon and stars, above the horizon, or their angular distance as seen in the sky. This instrument consists of a small telescope and a series of mirrors, by means of which the angle between the heavenly body selected and the horizon may be read on a graduated scale in the form of an arc attached to the instrument.

On shipboard the material used in the sextant is brass or bronze, but for ice traveling in late years aluminum has been employed.

Other necessary instruments are chronometers, or large watches, with compensating balance wheels, constructed for ex-



SEXTANT.

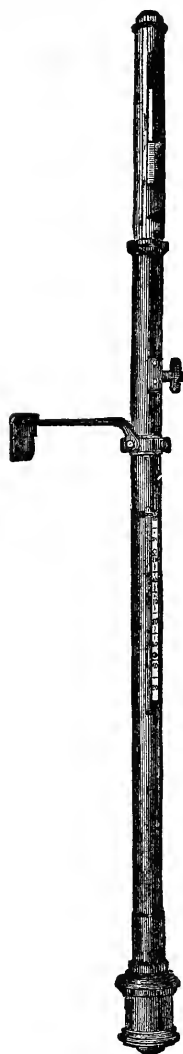
*Instrument by Queen & Co.,
Philadelphia.*

treme accuracy in timekeeping, every known device being employed to insure absolute uniformity of running. They are set to the exact time of a standard meridian (such as that of Greenwich, England), several being carried, of which the exact rate of gain or loss in each is known. By comparison of these with each other the observer is able to tell the precise moment of taking his observation.

An artificial horizon is another indispensable instrument. The greatest difficulty in astronomical work in the polar regions lies in getting a suitable horizon. The mariner in the open sea in clear weather has little difficulty in measuring the angle between any heavenly body and the actual visible sea horizon. On shore or surrounded by a sea of ice in various forms there is no such thing as a level, unbroken horizon, so that it becomes necessary to resort to an artificial horizon of some sort.

The usual method is to use a basin of mercury, which, when sheltered from the wind by a glass cover, forms a perfectly smooth horizon surface in which the heavenly bodies are brilliantly reflected. It is then necessary only to measure with a sextant the angle between the body in the heavens and its reflection in the artificial horizon to determine its actual elevation above the true horizon. It must be remembered, however, that mercury freezes at about forty degrees Fahrenheit below zero, and has accordingly a very limited field of usefulness in the polar regions. For this reason and on account of its weight some other form of artificial horizon is necessary.

Other liquids besides mercury have been used,

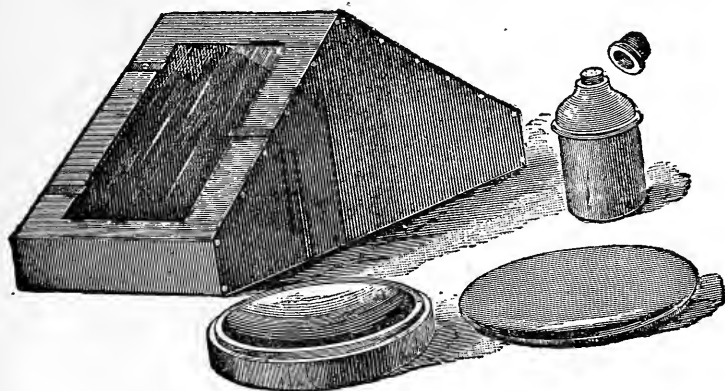


BAROMETER.

*Instrument by Queen
& Co., Philadelphia.*

as have also glass mirrors made horizontal by means of screw legs and spirit levels. These last require great care in adjusting, and there is always more or less error attending their use. With the above instruments one can determine his position with sufficient accuracy whenever the sun, moon or any of the principal stars is visible, but, having done so, it is a matter of no small difficulty to ascertain what is the proper direction in which to travel to be sure of always going north or south.

The compass, to which we are accustomed to look for guid-



ARTIFICIAL HORIZON.

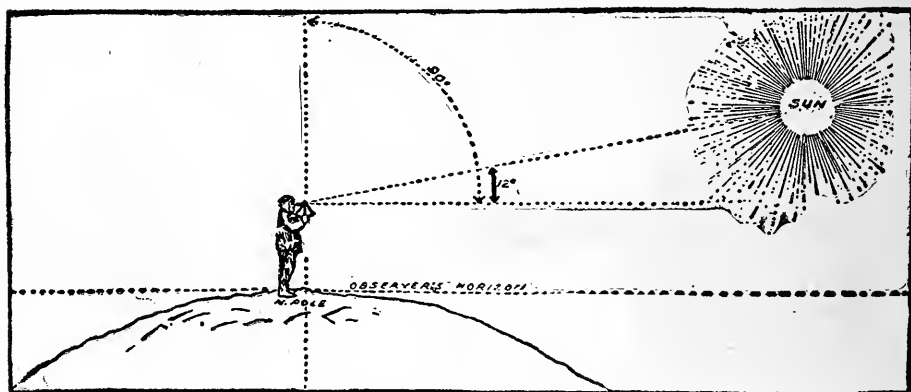
*Instrument by Queen & Co.,
Philadelphia.*

ance, does not, as is well known, point to the geographical pole, but to a region some distance from it, called the magnetic pole. At any place between that and the true pole the compass needle will point toward the magnetic pole. If to one side of the magnetic pole, it will point more or less east or west, as the case may be.

The drawbacks to determining one's position in the polar regions do not lie in the computations, but in the great difficulty of securing accurate observations. The lenses and mirrors of the

instruments are covered with frost from the warmth of the body or the breath, the lubricating oil freezes in the joints, the silver backing of the mirrors cracks and granulates in the cold, and the artificial horizons freeze if liquid, and refuse to stay horizontal if solid.

Should there be fog or the heavens be overcast, no observations are possible. During the six months of summer daylight the stars are not visible, although the brightest planets might be seen in especially favorable circumstances. The pole star, even if visible in winter, is of no practical utility. After the observation is taken,



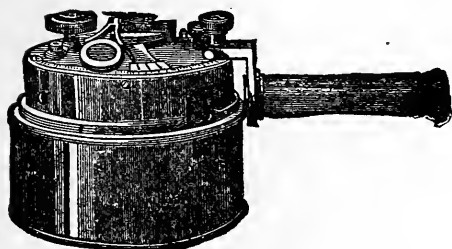
Method of determining the position of the North Pole with a Sextant.

certain corrections must be applied to the observed altitude to convert it to the true altitude. Of these the correction for refraction is the most important.

While not indispensable to an explorer, there are several other instruments of great value to him and of which records are of the utmost importance to science. Among these may be noted the Aneroid Barometer, an instrument used for determining the pressure of the atmosphere. If the pressure at sea level is known, this instrument will give a fairly accurate reading of the altitude at which the observer is standing.

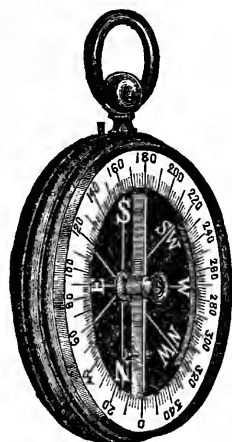
The thermometer, giving the temperature of the air, is naturally of great interest and value to the explorer. The ordinary mercury in glass thermometers is useless in extremely low temperatures, from the fact that mercury freezes at a temperature of 37.8 degrees Fahrenheit below zero. Consequently it is necessary to use what are known as spirit thermometers, or instruments in which a fluid having a lower freezing point than mercury is employed.

If the observer wishes to obtain an automatic record of either



POCKET SEXTANT.

*Instrument by Queen & Co.,
Philadelphia.*



POCKET COMPASS.

*Instrument by Queen &
Co., Philadelphia.*

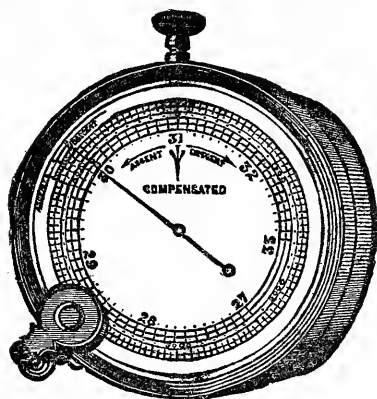
the highest or lowest temperature to which the instrument has been exposed, he may use what are known as Maximum or Minimum Thermometers. These are simply thermometers containing a device which remains fixed either at the highest or lowest temperature recorded.

A full equipment of scientific instruments might also include a wind gauge or Anemometer and deep-sea sounding instruments.

The Anemometer consists of a small fan, upon which the wind

acts. The revolutions of this fan are recorded by a series of dials, which indicate the velocity of the wind in feet per minute.

For deep-sea sounding, a sounding machine is used which auto-



ANEROID BAROMETER.

*Instrument by Queen & Co.,
Philadelphia.*

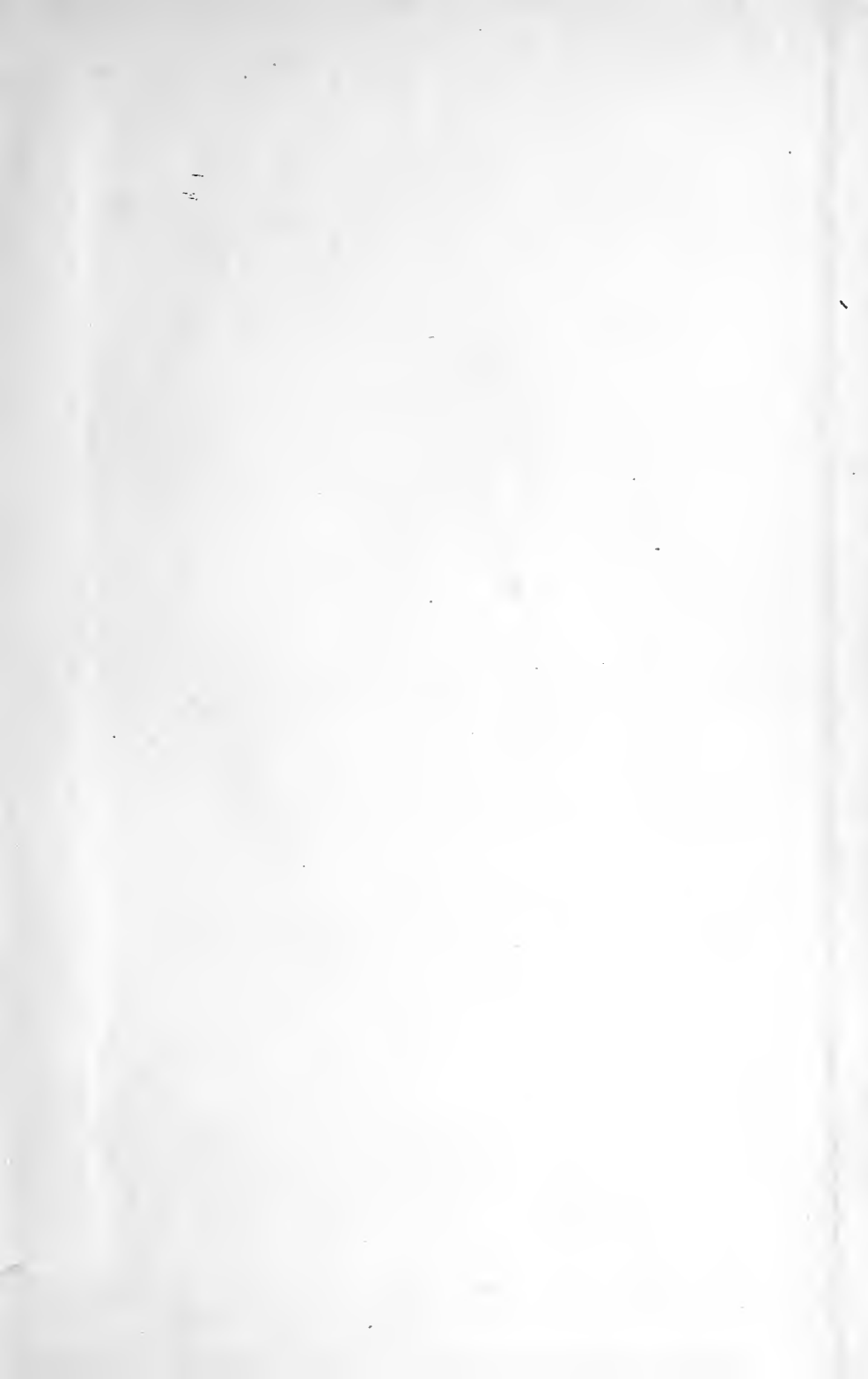


ANEMOMETER.

*Instrument by Queen & Co.,
Philadelphia.*

~matically records the pressure of the water, and from this the depth may be ascertained, as the two are in exact proportion.

*The 32 pages of illustrations contained in this book are not included in the paging. Adding these 32 pages to the 320 pages of text makes a total of 352 pages.



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